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Very Heavy Buying of Pig Iron

The Week's Total Nearly 400,000 Tons

Republic Company Advances Steel Bars—A Reduction in Wrought Pipe

A buying movement in pig iron, far more vigorous and extensive than has been seen in recent years, is in full swing in all sections of the country. In Southern iron the total closed is fully 200,000 tons, while Northern furnaces have done nearly as much, making the total for the week not far from 400,000 tons.

One Southern interest has disposed of 150,000 tons, about equally divided between foundry and basic irons. The pipe foundries have been heavy buyers, one company taking from 75,000 to 100,000 tons of Southern iron for its various plants, chiefly Western and Southern. The large agricultural machinery manufacturers have also bought from Southern furnaces. The sales of Southern basic have been mostly to steel foundries and are in consequence of the large car and locomotive orders announced last week. Southern No. 2 sold in the larger transactions of the week at $9.75 and Southern basic at $9.60 Birmingham.

The business of the past week has been largely for delivery over the first half of 1912, though some buying was for the first quarter only. Large inquiries for pig iron are pending, relatively much more in Central and Western districts than in the East. Car works requirements in malleable castings are being covered and in turn malleable foundries are closing for pig iron. The number of gray iron foundries which have placed orders for 1000 tons or more in the week for delivery in the first half of next year is very large. Appreciation of the lowness of prices seems to have spread widely and quickly.

A Southern Ohio steel company has taken bids on 20,000 tons of basic iron and in the Pittsburgh district inquiries for basic for the first half of 1912 amount to over 50,000 tons. One steel company that has not needed outside iron for several years is in the market for basic. The price has declined slightly and sales are now reported at $12.25 Valley furnace.

The week has been much less eventful in finished lines than in pig iron. A lull in car orders is natural after the burst of activity in the middle of the month. But the Missouri Pacific has bought 2000 cars more, making its total 5400 since August, and the Grand Trunk has placed 2000 steel hopper cars, while of the 4500 cars given out by the Canadian Pacific 2000 have come to shops on this side. The Chicago & Northwestern is expected to buy 75 locomotives in addition to 3300 cars. The Santa Fe's inquiry is for 8000 cars.

The rail market has been quiet for two weeks.

Details of specifications must be arranged on some pending business. Thus far only about 250,000 tons have been bought for 1912.

Indications have been pointing to a firmer market in steel bars. A definite turn to the situation was given this week by an announcement by the Republic Iron & Steel Company that it would take no more prompt business below 1.10c Pittsburgh and no business for delivery after January 1 below 1.15c. Recent business in bars has been heavy. Another manufacturer reports sales for shipment through February at 1.10c and for reinforcement work in the new New York subway, where deliveries run through 1912, at 1.15c.

Announcement is made of a reduction of one point or $2 a ton on butt weld pipe and of $4 a ton on lap weld pipe, effective December 1.

Railroad bridge orders have been growing in response to low prices, as happened in 1909. In Eastern districts the larger structural awards of the week amounted to about 29,000 tons, of which 18,000 tons went to the American Bridge Company.

Fuller operation of finishing mills has come in spots. Following the release of railroad orders, plate mills in the Pittsburgh and Chicago districts are making much larger outputs. Tin plate operations have increased to between 50 and 60 per cent. Eight of the 23 hot mills at Martins Ferry, Ohio, will be started December 4. Some mills have sold 60 to 70 per cent. of their output for 1912. Concessions from the $3.40 basis continue.

While wire mill capacity has been quite well employed, prices are weaker and sales have been made at $1.50 for nails and at $1.30 for annealed fence wire.

The Spheres of Wrought Iron and Rerolled Steel

In very recent times the manufacture of wrought iron appears to have found a definite place, in which it is promised more or less permanence. For years it has not been the leading material in the production of merchant bars, and its use among merchant mill products is now confined almost entirely to the manufacture of specialties. On the other hand, the manufacture of wrought iron for plates and sheets, particularly the latter, and for welded pipe has measurably increased, and for the production of a certain tonnage of these products wrought iron appears to have made for itself a definite place.

Inasmuch as the entire product of rolled soft material was at one time wrought iron, and steel entered the field simply by reason of its cheapness and convenience, it is necessary to draw a distinct line between the manufacture of iron as the remains of a decadent industry and the manufacture of iron as a definite and desired product. On the one hand, in recent years iron mills have been operated merely because they were in existence; such iron mills would not then have been erected with fresh capital. At the same time, however, certain new iron mills have been built for the purpose of making definite products, almost exclusively iron sheets and iron pipe. Naturally the supplanting of iron by steel was not instantaneous, and indeed it is surprising that the change was effected as rapidly as it was, for it necessarily involved the abandonment of a great deal of plant. Undoubtedly one reason for the quickness of the change was the fact that it occurred largely during a severe industrial depression, when the abandonment of plant was a light matter, and when, on account of the total demand growing so slowly, it was not difficult for the new material to push the old out of the field.

The greatest production of rolled iron occurred early in the nineties, although, on account of the earlier general adoption of steel as rail material, the production of rolled steel had already passed the production of rolled iron. For a period of several years, from some time in the eighties until the early nineties, we had the spectacle of the wrought iron industry growing in tonnage even though it was outclassed by the steel industry. Then rolled iron declined rapidly in tonnage for years until the present century, when a revival occurred, culminating in a high output in 1907. Throughout the entire period old iron mills were being abandoned, and the increase in tonnage was due partly to the starting of old mills which had not been abandoned, and partly to the erection of new iron mills to make the particular products to which we have referred as now occupying a defined and probably permanent place.

Statistical records of the wrought iron industry are quite incomplete, but the summations of the number of existing puddling furnaces made in the various editions of the American Iron and Steel Association's directory are of interest. We do not think the practice of the iron mills has been uniform in reporting their furnaces. Some, but apparently only a few, have reported their busheling and scrap furnaces as such, and we presume the totals given in the directories of "puddling furnaces" do not include such furnaces. They should do so, or else summarize them separately, for there is no fundamental distinction, as regards the finished product, between puddling, busheling and scrap furnaces; and indeed furnaces for heating piles on boards should have been given some place in the summaries. However, the statistics of "puddling furnaces" from recent editions of the Directory are as follows:

November, 1887.....	4882	April, 1898.....	3889
November, 1889.....	4914	November, 1901.....	3251
January, 1892.....	5120	June, 1904.....	3161
January, 1894.....	4715	November, 1907.....	2635
January, 1896.....	4408		

The maximum number was evidently reached in 1891 or 1892, but the decline in production in the nineties was much more rapid than the decline in the number of furnaces, so many lying idle during and after the industrial depression.

Statistics of tonnage production of wrought iron are available for 1890 and many previous years, and for 1904 up to the present time. Prior to 1888 complete statistics of rolled steel were not collected, and in the years 1891 to 1903 inclusive statistics of rolled iron and rolled steel were gathered together. From the tonnage data available there is reason to infer that the maximum tonnage production of wrought iron occurred very early in the nineties. The maximum proportion of rolled iron compared with all rolled material was of course 100 per cent. before the advent of steel. The proportion has been decreasing continuously since then, but it is our purpose to suggest that this decline in percentage has very lately been almost arrested, through wrought iron having made a definite place for itself in certain lines of consumption. In the following table we present statistics covering the only years for which the computation can be made of the percentage of rolled iron to total rolled iron and steel:

The Production of Rolled Iron in the United States.

	Rolled iron, gross tons.	Its percentage of total rolled iron and steel.
1888	2,153,263	46.5
1889	2,309,272	44.1
1890	2,518,194	42.8
1904	1,760,084	14.7
1905	2,059,990	12.2
1906	2,186,557	11.2
1907	2,200,086	11.1
1908	1,238,449	10.5
1909	1,709,431	8.7
1910	1,740,156	8.1

At the outset, rolled iron was made more from forge or mill pig than was the case in later years, because little scrap was available. Later, the proportion made from old material increased, because wrought iron scrap became more abundant, and undoubtedly by far the major portion of the wrought iron produced in the nineties was made from old material, for at that time a great deal of iron scrap was coming out. The tonnage of old steel scrap was then very limited, for steel had not been in use in large quantities for a sufficiently long time to bring much old material into the market. For a period of years the outcome of old wrought iron steadily increased, but in recent years there is reason to suspect it has been decreasing, and if the production of wrought iron—which decreased from 1907 to 1910—does not materially increase in the future, the outcome of old wrought iron is destined to decrease further. Thus it follows that of late the manufacture of wrought iron has had to depend more largely than formerly upon the use of forge pig iron. This, however, is in line with the policy of certain manufacturers who have been pushing iron sheets and iron pipe in the market as a distinct commodity.

On account of the nearly complete substitution of steel for iron, nearly 92 per cent. of the total rolled material in 1910 being steel, the old material coming out from year to year tends more and more to be steel rather than wrought iron. This steel naturally flows to the basic open-hearth steel furnace. To a limited extent it has been rolled with iron, whereby separate masses are stuck more or less permanently together; but as a rule steel does not lend itself to such rolling processes as does wrought iron, quite miscellaneous aggregations of which can be made into a fairly good finished product by fagoting and heating piles on boards.

It chances, however, that steel is coming back as old material in a better condition, and in larger masses and of more uniform section, than was the case with iron; and when enough steel of similar description is available, it becomes commercially feasible to roll it into other forms without any attempt at welding, making the finished section smaller than the original section. In the past few years a very important industry of this sort has grown up, in the rolling of old steel rails into light rails, bedstead angles and a great variety of other small structural shapes, as well as into various descriptions of merchant bars, and particularly bars intended for concrete reinforcement. Thus far the steel rerolling industry has attacked little material but old steel rails. It may easily be foreseen that in the future it will become commercially practicable to attack other forms, as the use of steel of large sections grows. Steel sheet piling is a comparatively new product, and as it can be used over and over again it is not offered as old material to any extent. Eventually, however, this piling, after such abuse as renders it unfit for further service, will come into the market, and when the flow is sufficiently steady it will be rerolled rather than remelted.

The rerolling of old steel has been, as a rule, an expensive process as compared with the cost of rolling new steel. The reason is that the average rerolling mill has been a hand mill very largely, while the new steel is rolled chiefly on continuous mills of the most modern type. Given a sufficiently uniform section of old material upon which to work, there is no reason why rerolling practice should not be reduced to a very low cost basis. It will then take much the same economic place in making old steel fit for re-use as has been occupied by the iron mill rolling piles on boards, fagots, etc.

An Appeal to Prejudice

Chairman Stanley of the committee that is assumed to be investigating the United States Steel Corporation said last week after the testimony of the Merritt brothers concerning their dealings with John D. Rockefeller and F. T. Gates in the early days of the Mesaba iron range, that he had gone into the matter "in the interest of humanity." Even taking the chairman at his word, he deserved the full force of the rebuke dealt him by a fellow-member, who protested against such a use of the machinery given the committee by the House of Representatives "to prejudice the defendants before this committee—and I say 'the defendants' knowingly, because the whole attitude of the committee has been as a prosecuting committee."

Granting that Chairman Stanley's view of the Merritt transactions was the right one—though there are counter statements which put a very different light on them—his effort to connect them in the public mind with the Steel Corporation is shameful evidence of the appeal to prejudice and passion into which the inquiry has apparently degenerated. The sinister innuendo of his remarks, taking credit to himself for bringing the Rockefeller-Merritt controversy into the committee's hearings, will not be missed. He said with unconcealed sarcasm:

> We have heard so much about the absence of moral turpitude on the part of these people [officers of the Steel Corporation] who may have technically violated the law and who are now defendants in this action, that I thought it just as well to introduce a little evidence that would exculpate this committee forever afterward from any intimation, any suspicion, that we were seeking to punish—not to punish, because I do not seek to punish but to investigate—to investigate a technical violation of the law, were there no law, no archaic and foolish law, like the Sherman Act in force. And I picked up this little incident from my journey in Minnesota, which to me was very interesting and very sad, which I thought might just settle that question in the minds of many men—many distinguished men, a great many men—who are disturbed for fear this committee might throw light upon facts which might lead possibly to any action by the courts which would convict them, who are only technically guilty and who are morally, personally, industrially, innocent and commendable.

In other words, this "very interesting and very sad" story is introduced into the investigation of the Steel Corporation so that there might never be any doubt of the turpitude of the officers of that corporation in connection with a transaction with which they had not the remotest thing to do. And on the motion to strike out the Merritt testimony "as irrelevant and entirely out of place," we are told that the Stanley committee divided on strict party lines. Nothing that might be added to the above extract from the record could make it plainer that political necessity is a chief incitement to the continuing attack on great business.

Do Congressmen Enjoy Ruinous Steel Prices?

Washington advices report that the Stanley Committee is restive under the criticism that the expenses which it has incurred are disproportionate to the results accomplished. The chairman of the committee says that these expenses have up to the present time been about $25,000 and he believes that this will not be regarded by the House of Representatives as excessive. As an offset to the expenditure of public funds thus made, members of the committee claim that soon after it began its work reductions were forced in steel plates, structural shapes, tubes and other forms of steel manufacture to such an extent that "a saving has been realized by consumers amounting to from $25,000,000 to $40,000,000." In the light of this enormous saving by various consuming interests, it is urged that the cost of the investigation is hardly worth considering.

It is an extreme view to take of the work of this committee that the severe reductions in steel prices which have been made this year have been wholly due to the influence of the committee's investigation. Those who are engaged in the iron and steel trade may hardly be inclined to give the full credit of these reductions to the committee's work, although they may blame it for helping to depress business. Some of them were begun before it got to work actively. At the same time it might be said that the members of the committee who make such a claim are seeking for praise where they would deserve censure. The prices of the steel products on which such heavy reductions have been made were not exorbitant, and the country was not seriously suffering from the exactions of the steel manufacturers. The prices now ruling, however, and for which these members of Congress take credit to themselves, are such as to afford little profit to manufacturers having the greatest advantages for producing at low cost and are most eligibly located, while others are hardly getting a new dollar for an old one. The condition of the iron and steel industry is hardly of the kind that even a member of Congress should gloat over.

A Proposed Bounty on Canadian Pig Iron

Hopes are entertained by the Canadian iron and steel manufacturers that the new Dominion Government will again grant a bounty on pig iron. A deputation of Canadian iron and steel manufacturers waited on the Prime Minister and his cabinet colleagues at Ottawa, November 22, to urge the granting of a County "as a partial compensation for the disabilities under which the industry is placed through the lowering of duties, exemptions and discriminations." The spokesmen of the deputation were J. H. Plummer, president Dominion Steel Corporation; T. J. Drummond, president Canada Iron Corporation and Algoma Steel Company; Thomas Cantley, president Nova Scotia Steel & Coal Company; R. Hobson, president Steel Company of Canada, and R. J. Mercure. A memorial was presented asking for an investigation of conditions in the iron and steel industry and for some declaration of policy that would warrant the directors of iron and steel industries in going ahead with plans for enlargements and improvements. Prime Minister Borden promised that the matter should have consideration.

As the Canadian manufacturers exerted a powerful influence toward defeating the proposed reciprocity agreement with the United States, and thus assisted in placing Mr. Borden and his party in power, it would seem that they have such strong claims on the new administration that the bounty they ask for will be granted to them. Possibly a bounty may be needed, but the developments of the past few months do not seem to have made this certain. Even with pig iron prices on this side of the border down to an extremely low level, owing to the depression prevailing here, the Canadian manufacturers appear to have been well able to hold their own against American competition in their markets.

The Place of 1911 in the Pig Iron Record

It is now possible to estimate rather closely the record 1911 will make in pig iron production. For the first half of the year the official returns showed 11,665,000 gross tons. The increase in output since July will bring the total for the second half close to 12,200,000 tons, so that the year will show not far from 23,900,000 tons, allowing for some increase upon the rate of production at the beginning of November. The year thus takes its place between 1905 and 1906 in the pig iron column, the former with an output of 22,992,380 tons and the latter with 25,307,191 tons. Thus 1911 will stand fifth in order of pig iron production, 1910 with 27,303,567 tons, 1909 with 25,795,471 tons, 1907 with 25,781,361 tons and 1906 with 25,307,191 having precedence in the order named. The consumption in 1910 was probably not over 26,000,000 tons, since stock accumulations were well over 1,000,000 tons; in 1911 the reverse has been true, consumption having been sufficient to eat into stocks, probably to the extent of more than 400,000 tons. Measured by the pig iron entering either into home consumption or exports, 1911 has thus fallen only about 6 per cent. short of the record year—a performance far beyond what the iron trade has been willing to believe as the various disappointments of the year have in turn disclosed themselves.

Ericsson Memorial Dinner.—The Capt. John Ericsson Memorial Society of Swedish Engineers held its fifth annual dinner, in commemoration of Ericsson's arrival in this country 72 years ago, at the Engineers' Club, New York City, November 25. About 75 engineers from various points in the East attended. C. G. de Laval, general manager of Henry R. Worthington, Inc., Harrison, N. J., presided. Among the speakers were C. J. Mellin, consulting engineer American Locomotive Company, Schenectady, N. Y.; G. P. Wern, manager Meade-Morrison Mfg. Company; Col. William C. Church, editor Army & Navy Journal; Col. E. D. Meier, retiring president American Society of Mechanical Engineers; Capt. A. P. Lundin, president Welin Davit and Lane & De Groot Company, and Edward H. Johnson, who for many years was associated with Thomas A. Edison. Among others present were Albert Brodin, Reading Iron Company, Reading, Pa.; E. H. Frisell, of Milliken Brothers, Inc., Staten Island, and Frank Mossberg, president Frank Mossberg Company, Attleboro, Mass.

The American Society of Engineer Draftsmen, of which Walter M. Smyth, 116 Nassau street, New York, is secretary, will hold its regular monthly meeting in the Engineering Societies Building, 29 West Thirty-ninth street, at 8.15 p. m., December 21. C. M. Shigley, Columbus, Ohio, will read a paper on "Patent Office Drawing" and William H. Chorlton, of the designing department of the American Bridge Company, will lecture on "Bridge Drafting from the Engineer's Point of View."

Programme of Mechanical Engineers' Meeting

The professional programme has been announced for the annual meeting of the American Society of Mechanical Engineers, in the Engineering Societies Building, New York, December 5, 6, 7 and 8. As already mentioned, the opening session occurs on the evening of December 5 and is given over to the presentation of the presidential address and a general reception and reunion. The regular business session occurs Wednesday morning; excursions, including an inspection of the steamship Olympic, are arranged for Thursday afternoon, and the annual reunion in honor of the newly elected officers will be held Thursday evening at the Hotel Astor. The programme of papers, requiring simultaneous sessions on Wednesday afternoon and Thursday morning, is as follows:

Wednesday morning: "The Turret Equatorial Telescope," James Hartness; "Expense Burden—Its Incidence and Distribution," Sterling H. Bunnell; "Standard Cross-Sections," H. de B. Parsons.

Wednesday, 2 p. m.: "Tests of Large Boilers at the Detroit Edison Company," D. S. Jacobus; "Strain Measurements of Some Steam Boilers Under Hydrostatic Pressures," James E. Howard; "Herringbone Gears," P. C. Day.

There will be a separate cement session in charge of the sub-committee on cement manufacture.

Wednesday, 8.00 p. m.: "Geo-Dynamics, or the Mechanics of the Formation of Worlds," address by Dr. Robert Simpson Woodward, president Carnegie Institution, of Washington, D. C.

Thursday, 10.00 a. m.: "The Core Room—Its Equipment and Management," Henry M. Lane; "Tests of a Sand-Blasting Machine," Wm. T. Magruder; "Die Castings," Amasa Trowbridge; "Variable-Speed Power Transmission," G. H. Barrus and C. M. Manly.

Thursday, 10.00 a. m., Gas Power Section: "Oil Engines," H. R. Setz; "Test of an 85-hp. Oil Engine," Forrest M. Towl; "Design Constants for Small Gasoline Engines," Wm. D. Ennis; "Natural Gas Engine of 1000 Kw.—Tests, Construction and Working Costs," E. D. Dreyfus and V. J. Hulquist.

Friday, 10.00 a. m.: "The Development of the Textile Industries of the United States," Frank W. Reynolds; "Rational Psychrometric Formulæ—Their Relation to the Problems of Meteorology and of Air Conditioning," W. H. Carrier; "Air Conditioning Apparatus," W. H. Carrier and F. L. Busey; "Some Experiences with the Pitot Tube on High and Low Air Velocities," Frank H. Kneeland.

Additional Niagara Falls Power Development

All three of the power companies located on the Canadian side of the river at Niagara Falls are making extensive additions to their plants. The enlarged generating facilities will enable them to increase their power output to more closely approximate the maximum permitted by the government. The work now in progress will cost several million dollars and provide facilities for generating 71,500 additional horsepower.

The Canadian Niagara Power Company, the Canadian branch of the Niagara Falls Power Company on the New York State side of the river, has under way an addition to its power house which will cost $150,000 and afford facilities in the completed power plant for the conversion into power of the 11,000 ft. of water per second, which is the maximum it is permitted to divert. This extension will be ready next spring, but only one additional unit of 10,000 hp. will be installed at that time, others being added as required. The present plant consists of six 10,000-hp. units. The greater portion of the power output is transmitted to Buffalo. The amount that this company may export to the United States is 52,500 hp.

The Electrical Development Company, all of whose current is marketed in Toronto, has just completed an addition to its power house and will soon receive bids for the generating equipment. The company is now generating 50,000 hp. with four generators of 12,500 hp. each, and three other units of the same capacity each are to be assembled. The company is limited to the development of 125,000 hp., while the power development limit of the other companies is fixed by the amount of water diversion permitted to each company.

The Ontario Power Company, which is under contract with the Hydro-Electric Commission to supply current to the Canadian Government line, and whose power house is underneath the cliff at Table Rock, has completed a second delivery pipe 18 ft. in diameter from the Dufferin Islands to the power house, and is at work on the penstock extensions. This company, which now has ten 12,000-hp. generators in operation, will add two more of the same size, bringing the total capacity of the plant up to 144,000 hp.

The increased revenue to be derived by the Canadian Government from the additional power development will amount to $125,000 and will be devoted to the further beautification of Victoria Park on the Canadian side of the Falls and the completion of the boulevard along Niagara River from Victoria Park to Ft. Erie, opposite Buffalo. The power companies have agreed that all traces of the work of improvement shall be removed by next summer and the park restored to its former condition.

Improvement in Electric Induction Furnace Linings

In the evolution of the electric induction furnace, the production of a suitable lining to withstand the special conditions has presented difficulties. These difficulties resulted partly from the shape of the bath, deep as compared with its width, and partly from the strong rolling motion of the charge, both of which make it a difficult matter to overcome troubles due to expansion and contraction. It may, therefore, be of interest to record the results obtained from a long series of trials with a pure induction furnace of the Kjellin type, carried out at the works of the Poldihutte Tiegelguszstahlfabrik, Kladno, one of the principal ordnance works in Austria.

In January, 1908, the Poldihutte company put into commission a Kjellin induction furnace having a capacity of over 4 tons. High class steel was produced by means of the basic process, the lining first used being Veit magnesite. The furnace was not erected on solid foundations, but for special reasons was mounted on a carriage with provision for rotating the body of the furnace in either direction about a vertical axis. This arrangement necessarily allowed considerable vibration, which resulted in the production of cracks in the magnesite lining to such an extent that it was found impossible to obtain more than 49 charges without a renewal.

The engineers of the Poldihutte company began experiments with various combination linings, with such good results that the average durability obtained during 1909 was 200 charges per lining. The improvement has been continuous, as is shown by the following statement, giving the highest number of charges obtained per lining during each quarter from the commencement of 1910:

	Charges.
First quarter of 1910	227
Second quarter of 1910	259
Third quarter of 1910	262
Fourth quarter of 1910	288
First quarter of 1911	386
Second quarter of 1911	392
Third quarter of 1911	491

It is stated that no repairs were carried out in the lining at the slag line. Patents have been granted in all countries, and the British and American rights are held by the Grondal Kjellin Company, Ltd., London.

Admitting compressed air into the gas engine cylinder at the end of the exhaust stroke is proposed in a recent issue of the Zeitschrift des Vereines Deutscher Ingenieure. It is recognized that the residual of the burned gases remaining in the cylinder and mixed with the new charge dilutes the fresh mixture, impoverishes it, and generally interferes with the ignition of the charge, unduly elevates the initial temperature, predisposes the motor to premature explosion and affects the efficiency of operation. The author showed by means of diagrams and figures of a number of tests how the efficiency was increased as the result of the adoption of the valve which admits the air under pressure at the end of the exhaust stroke.

The Iron and Metal Markets

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Nov. 29, 1911.	Nov. 22, 1911.	Oct. 25, 1911.	Nov. 30, 1910.
PIG IRON, Per Gross Ton:				
Foundry No. 2 standard, Philadelphia	*$14.85*	$14.90	$15.00	$15.50
Foundry No. 2, Valley furnace.	*13.00*	13.25	13.25	14.00
Foundry No. 2 Southern, Cincinnati	*13.00*	13.25	13.25	14.25
Foundry No. 2, Birmingham, Ala.	*9.75*	10.00	10.00	11.00
Foundry No. 2, at furnace, Chicago*	14.00	14.00	14.35	16.00
Basic, delivered, eastern Pa....	14.50	14.50	14.50	14.75
Basic, Valley furnace.....	*12.25*	12.35	12.50	13.50
Bessemer, Pittsburgh	14.90	14.90	15.40	15.90
Gray forge, Pittsburgh.....	*13.25*	13.40	13.65	13.90
Lake Superior charcoal, Chicago	16.50	16.50	16.50	18.00
COKE, CONNELLSVILLE,				
Per Net Ton, at Oven:				
Furnace coke, prompt shipment	*1.50*	1.55	1.50	1.45
Furnace coke, future delivery..	*1.60*	1.65	1.55	1.70
Foundry coke, prompt shipment	*1.85*	1.90	1.80	2.00
Foundry coke, future delivery..	2.10	2.10	2.00	2.10
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh....	19.00	19.00	20.00	23.00
Open-hearth billets, Pittsburgh.	18.50	18.50	19.00	23.00
Forging billets, Pittsburgh.....	24.00	24.00	24.00	28.50
Open-hearth billets, Philadelphia	21.40	21.40	21.40	25.50
Wire rods, Pittsburgh.....	25.00	25.00	26.00	28.00
OLD MATERIAL, Per Gross Ton:				
Iron rails Chicago.....	14.50	14.50	13.50	16.00
Iron rails, Philadelphia.....	15.50	15.50	16.00	18.00
Car wheels, Chicago.....	**12.50**	12.00	12.50	13.50
Car wheels, Philadelphia.....	**11.50**	11.25	11.75	13.75
Heavy steel scrap, Pittsburgh..	12.00	12.00	12.00	14.25
Heavy steel scrap, Chicago.....	9.50	9.50	9.50	12.25
Heavy steel scrap, Philadelphia	11.50	11.50	11.75	13.00
FINISHED IRON AND STEEL,				
Per Pound to Largest Buyers:	Cents.	Cents.	Cents.	Cents.
Bessemer rails, heavy, at mill..	1.25	1.25	1.25	1.25
Iron bars, Philadelphia.....	1.20	1.20	1.20	1.35
Iron bars, Pittsburgh.....	1.20	1.20	1.20	1.40
Iron bars, Chicago.....	1.15	1.15	1.15	1.35
Steel bars, Pittsburgh.....	1.05	1.05	1.10	1.40
Steel bars, tidewater, New York	1.21	1.21	1.26	1.56
Tank plates, Pittsburgh.....	1.10	1.10	1.15	1.40
Tank plates, tidewater, New York	1.26	1.26	1.31	1.56
Beams, Pittsburgh.....	1.10	1.10	1.20	1.40
Beams, tidewater, New York...	1.26	1.26	1.36	1.56
Angles, Pittsburgh	1.10	1.10	1.20	1.40
Angles, tidewater, New York...	1.26	1.26	1.36	1.56
Skelp, grooved steel, Pittsburgh	1.12½	1.12½	1.15	1.25
Skelp, sheared steel, Pittsburgh	1.20	1.20	1.25	1.30
SHEETS, NAILS AND WIRE,				
Per Pound to Largest Buyers:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	1.85	1.85	1.85	2.20
Wire nails, Pittsburgh.....	*1.50*	1.55	1.60	1.70
Cut nails, Pittsburgh.....	*1.45*	1.50	1.50	1.60
Barb wire, galv., Pittsburgh...	1.85	1.85	1 90	2.00
METALS,				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York.....	**13.25**	13.00	12.62½	13.00
Electrolytic copper, New York.	**13.12½**	12.87½	12.50	12.87½
Spelter, St. Louis.....	**6.80**	6.60	6.20	5.80
Spelter, New York.....	**6.95**	6.75	6.35	5.95
Lead, St. Louis.....	**4.35**	4.27½	4.15	4.40
Lead, New York.....	**4.45**	4.35	4.25	4.50
Tin, New York.....	**45.25**	43.35	42.05	37.35
Antimony, Hallett, New York.	*7.60*	7.65	7.70	7.75
Tin plate, 100-lb. box, New York	$3.64	$3.64	$3.64	$3.84

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb. New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.10c. to 1.15c., base, net cash, 30 days. Following are stipulations prescribed by manufacturers, with extras:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras.	Cents per lb.
Gauges under ¼ in. to and including 3-16 in. on thinnest edge	.10
Gauges under 3-16 in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including all straight taper plates) 3 ft. and over in length	.10
Complete circles, 3 ft. in diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in.	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive	.50
Cutting to lengths or diameters under 1 ft.	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in., and angles, 3 to 6 in. on one or both legs, ¼ in. and over, 1.10c. to 1.15c. Other shapes and sizes are quoted as follows

	Cents per lb.
I-beams over 15 in.	1.15 to 1.20
H-beams over 18 in.	1.25 to 1.30
Angles over 6 in.	1.15 to 1.20
Angles, 3 in. on one or both legs, less than ¼ in. thick, plus full extras, as per steel bar card Sept. 1, 1909	1.15 to 1.20
Tees, 3 in. and up	1.15 to 1.20
Zees, 3 in. and up	1.10 to 1.15
Angles, channels and tees, under 3 in., plus full extras as per steel bar card Sept. 1, 1909.	1.15 to 1.20
Deck beams and bulb angles	1.40 to 1.45
Hand rail tees	1.95 to 2.10
Checkered and corrugated plates	1.95 to 2.10

Sheets.—Makers' prices for mill shipments on sheets of U. S. standard gauge, in carload and larger lots, on which jobbers charge the usual discounts for small lots from store, are as follows:

Blue Annealed Sheets.

	Cents per lb.
Nos. 3 to 8	1.25 to 1.30
Nos. 9 and 10	1.35 to 1.40
Nos. 11 and 12	1.40 to 1.45
Nos. 13 and 14	1.45 to 1.50
Nos. 15 and 16	1.55 to 1.60

Box Annealed Sheets, Cold Rolled.

	One Pass.	Three Pass.
Nos. 10 to 12	1.50 to 1.55	.....
Nos. 13 and 14	1.55 to 1.60	.....
Nos. 15 and 16	1.60 to 1.65	1.70 to 1.75
Nos. 17 to 21	1.65 to 1.70	1.75 to 1.80
Nos. 22, 23 and 24	1.70 to 1.75	1.80 to 1.85
Nos. 25 and 26	1.75 to 1.80	1.85 to 1.90
No. 27	1.80 to 1.85	1.90 to 1.95
No. 28	1.85 to 1.90	1.95 to 2.00
No. 29	1.90 to 1.95	2.00 to 2.05
No. 30	2.00 to 2.05	2.10 to 2.15

Galvanized Sheets, of Black Sheet Gauge.

Nos. 10 and 11	1.85 to 1.90
Nos. 12, 13 and 14	1.95 to 2.00
Nos. 15, 16 and 17	2.10 to 2.15
Nos. 18 to 22	2.25 to 2.30
Nos. 23 and 24	2.35 to 2.40
Nos. 25 and 26	2.55 to 2.60
No. 27	2.70 to 2.75
No. 28	2.85 to 2.90
No. 29	2.95 to 3.00
No. 30	3.15 to 3.20

All above rates on sheets are f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount in 10 days from date of invoice, as also are the following base prices per square for painted and galvanized roofing sheets, with 2½-in. corrugations.

Corrugated Roofing Sheets, Per Square.

Gauge.	Painted.	Galvanized.	Gauge.	Painted.	Galvanized.
29.....	....	$2.30	23.....	$2.35	$3.45
28.....	$1.30	2.45	22.....	2.55	3.65
27.....	1.45	2.50	21.....	2.75	4.00
26.....	1.55	2.60	20.....	3.00	4.30
25.....	1.80	3.00	18.....	4.00	5.65
24.....	2.05	3.10	16.....	4.85	6.45

Wire Rods and Wire.—Bessemer, open-hearth and chain rods, $25. Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days, or 2 per cent. discount in 10 days, carload lots, to jobbers, annealed, $1.30; galvanized, $1.60. Carload lots, to retailers, annealed, $1.40; galvanized, $1.70. Galvanized barb wire to jobbers, $1.80; painted, $1.50. Wire nails, to jobbers, $1.50.

The following table gives the price to retail merchants on wire in less than carloads, including the extras on Nos. 10 to 16, which are added to the base price:

Fence Wire, Per 100 lb.

Nos.	0 to 9	10	11	12 & 12½	13	14	15	16
Annealed	...$1.50	$1.55	$1.60	$1.65	$1.75	$1.85	$1.95	$2.05
Galvanized	.. 1.80	1.85	1.90	1.95	2.05	2.15	2.55	2.65

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on wrought pipe, in effect from October 2, 1911:

	Steel		Iron	
	Black.	Galv.	Black.	Galv.
Butt Weld.				
⅛ and ¼ in.	73	53	68	48
⅜ in.	74	64	69	59
½ in.	77	67	72	62
¾ to 1½ in.	80	72	75	67
2 to 3 in.	81	74	76	69
Lap Weld.				
1¼ and 1½ in.	..	..	68	61
2 in.	77	70	72	65
2½ to 4 in.	79	72	74	67
4½ to 6 in.	78	70	73	65
7 to 12 in.	76	66	71	61
13 to 15 in.	52	..	47	..
Butt Weld, extra strong, plain ends, card weight				
⅛, ¼, ⅜ in.	70	60	65	55
½ in.	75	69	70	64
¾ to 1½ in.	79	73	74	68
2 to 3 in.	80	74	75	69
Lap Weld, extra strong, plain ends, card weight.				
1½ in.	..	..	66	60
2 in.	76	70	71	65
2½ to 4 in.	78	72	73	67
4½ to 6 in.	77	71	72	66
7 to 8 in.	70	60	65	55
9 to 12 in.	65	55	60	50
Butt Weld, double extra strong, plain ends, card weight.				
½ in.	65	59	60	54
¾ to 1½ in.	68	62	63	57
2 to 3 in.	70	64	65	59
Lap Weld, double extra strong, plain ends, card weight.				
2 in.	66	60	61	55
2½ to 4 in.	68	62	63	57
4½ to 6 in.	67	61	62	56
7 to 8 in.	60	50	55	45

Plugged and Reamed.

1 to 1½, 2 to 3 in. Butt Weld } will be sold at two (2) points lower basing (higher price) than merchants' or card weight pipe. Butt or lap weld as specified.
2, 2½ to 4 in. ..... Lap Weld }

The above discounts are for "card weight," subject to the usual variation of 5 per cent. Prices for less than carloads are three (3) points lower basing (higher price) than the above discounts.

Boiler Tubes.—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

Steel.		*Charcoal Iron.*	
1¾ to 2¼ in.	65	1½ in.	48
2½ in.	67½	1¾ to 2¼ in.	50
2¾ to 3¼ in.	72½	2½ in.	55
3½ to 4 in.	75	2¾ to 5 in.	60
5 to 6 in.	67½		
7 to 13 in.	65		

2½ in. and smaller, over 18 ft., 10 per cent. net extra.
2¾ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft. and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discounts, lowered by two points.

Pittsburgh

PITTSBURGH, PA., November 29, 1911.—*(By Telephone.)*

Pig Iron.—The very low prices on basic iron, which is reported to have sold recently as low as $12.15, Valley furnace, have induced large purchases, and some heavy inquiries are in the market. A local steel company, that has not been a buyer of pig iron for several years, is asking for 25,000 to 30,000 tons, and may possibly buy 50,000 tons if the iron can be had for the deliveries wanted and at the right price. Another local steel interest, that has been a fairly large buyer of basic iron, is getting prices on 15,000 to 20,000 tons for first quarter delivery, and may possibly buy more. Another local steel interest bought 500 tons of basic for prompt shipment at $12.25, Valley furnace, and another bought 1500 tons for first four months of next year at the same price. Part of this iron comes from Valley furnaces and part from Midland, Pa., the latter equalizing freight with the Valley furnaces. A southern Ohio company is buying this week upward of 20,000 tons of basic iron, and a northern Ohio consumer has bought 1000 tons for prompt shipment. There is practically no new inquiry for Bessemer iron. The Westinghouse Air Brake Company has bought 4000 to 5000 tons of forge and foundry iron, part coming from Valley furnaces and part from central Pennsylvania. Prices on foundry iron are slightly weaker, some furnaces offering to sell for first quarter delivery at $13 at furnace, though others refuse to shade $13.25. We quote: Standard Bessemer iron, $14; malleable Bessemer, $12.50; basic, $12.25; No. 2 foundry, $13 to $13.25; gray forge, $12.35 to $12.50, all at Valley furnace, the freight rate for delivery to the Pittsburgh district being 90c. a ton.

Billets and Sheet Bars.—Open-hearth billets and sheet bars are being offered at slightly lower prices in small lots for prompt shipment. A leading steel mill reports that its specifications against contracts for billets and sheet bars in November have been a little heavier than last month. We quote open hearth billets $18.50 to $19; Bessemer billets, $19; open hearth sheet bars, $19.50 to $20; Bessemer sheet bars, $20 to $20.50, and forging billets, $24, all f.o.b. cars, makers' mill, Pittsburgh or Youngstown district.

Structural Material.—The American Bridge Company, Pittsburgh, has taken a contract for 2300 tons of steel for the Seneca Building of the New York Telephone Company, Buffalo, N. Y., and 1600 tons for a department store at Rochester, N. Y.

(By Mail.)

Reports from sales managers agree that the volume of new orders being sent to the mills for rolling is steadily increasing, due no doubt to the low prices ruling. More live inquiries for cars are in the market that will no doubt soon result in contracts. New business is being placed in sheets, and some heavy contracts for tin plate have been taken for spring and summer delivery. Effective December 1 a reduction of one point, or $2 a ton, on butt weld pipe and two points, or $4 a ton, on lap weld pipe will be made.

Ferromanganese.—A sale of 200 tons of 80 per cent. foreign for first quarter delivery has been made on the basis of $38, Baltimore. Inquiry is light. Prices are firm and we quote 80 per cent. for delivery in first half at $38 to $38.25, Baltimore, and on small lots for prompt shipment, $37.50 to $38, Baltimore, the freight rate for delivery in the Pittsburgh district being $1.95 a ton.

Ferrosilicon.—Prices on 50 per cent. continue to advance, and it is quoted to-day at $68, Pittsburgh, the highest price reached in a long time. An inquiry is in the market for 75 to 100 tons. The lower grades are cheaper, and we quote 10 per cent., $21; 11 per cent., $22, and 12 per cent., $23, f.o.b. cars at furnace, Jackson, Ohio, or Ashland, Ky.

Skelp.—No important sales have been made in the past week. We quote grooved steel skelp at 1.12½c. to 1.15c.; sheared steel skelp, 1.17½c. to 1.20c.; grooved iron skelp, 1.40c. to 1.45c., and sheared iron skelp, 1.60c. to 1.65c., all for delivery at consumers' mills in the Pittsburgh district.

Wire Rods.—The rod market is dull, new inquiry being only for small lots. Most consumers are covered by contracts, on which prices are being adjusted each month to a lower basis than for the preceding month. We quote Bessemer, open hearth and chain rods at $25, Pittsburgh, but on a firm offer this price might be shaded.

Steel Rails.—No important contracts for standard sections have recently been placed here, new orders being for small lots only, ranging from 200 to 500 tons. The demand for light rails is active from the coal mining and lumber interests, and in the past week the Carnegie Steel Company received new orders and specifications for about 3500 tons. We quote standard sections at 1.25c. per lb.; 8 and 10-lb., light rails, 1.25c.; 12 and 14-lb., 1.16c.; 16, 20 and 25-lb., 1.12c.; 30 and 35-lb., 1.10c., and 40 and 45-lb., 1.08c., f.o.b. at mill.

Structural Material.—No important contracts have been placed, and there are no large inquiries out. All the local structural interests are short of work and are able to make prompt deliveries. Low prices continue to be made, and it is said some jobs have been placed in the past week or two at prices that mean very close to 1c. for the plain material. We quote beams and channels up to 15 in. at 1.10c. to 1.15c., but on some very desirable specifications the lower price has been shaded.

Plates.—The Canadian Pacific has bought 4500 box cars, of which the Canadian Car & Foundry Company will furnish 2500, the American Car & Foundry Company 1000 and the Pressed Steel Car Company 1000. The Grand Trunk is reported to have placed an order with the Pressed Steel Car Company for 2000 all-steel hopper cars, of which 1000 will be built at McKees

Rocks and 1000 at its Chicago works. Inquiries reported in the market include 3000 to 3500 freight cars for the Chicago & Northwestern; 100 flat cars for the Missouri & North Arkansas; 500 ballast cars, 500 automobile cars, 250 freight cars and 25 cabooses for the Chicago, Rock Island & Pacific, and 50 steel postal cars and 20 steel traction cars for the Harriman Lines. We quote narrow and wide plates at 1.10c. to 1.15c. at mill, but on some very large contracts and desirable specifications, 1.05c. at mill has been done.

Tin Plate.—Some heavy contracts placed in the past two or three weeks by meat packers and can makers are stated to have been made for delivery over all of next year. Practically all such contracts carry a price guarantee. Several of the independent mills report they have sold the greater part of their output for the first half of 1912, and specifications are expected to begin to come in early in the new year, when the rate of operations will be considerably increased. The leading mills are operating at present to about 50 per cent., but a few are running to 60 per cent. or more. The open market on tin plate remains at $3.40 per base box for 14 x 20 coke plates, but some large contracts have been taken at 10c. per box or more under this figure.

Steel Bars.—Both the new demand for steel bars and specifications against contracts are running heavier, partly due to the demand from the car builders. Several of the leading steel bar mills report that actual orders sent to the mills this month for rolling exceed those in October. As yet prices have not shown any betterment. The general market on steel bars is 1.10c. at mill for ordinary orders, but on very desirable specifications 1.05c. has been named. Some mills, however, refuse to meet this figure, 1.10c. being their minimum. The new demand for iron bars is reported slightly better, and we quote common iron bars at 1.20c. to 1.25c. f.o.b. maker's mill.

Sheets.—Some large contracts for black and galvanized sheets for delivery in the first quarter and first half of next year have been made in the past week at prevailing prices. Some mills are not disposed to sell ahead so far, being confident that after the first of the year prices will be better and the demand heavier. Orders sent to the mills for rolling this month have been larger than in October, and specifications against contracts are also coming in more freely. The high prices ruling for spelter, which has sold as high as 6.75c., East St. Louis, having naturally increased the cost of making galvanized sheets, prices on this grade are firmer. While some report they are slightly increasing operations, the mills generally continue to operate at 60 to 65 per cent. of capacity. The market on black sheets is based on 1.85c. for No. 28, but in a few cases 1.80c. has been done on desirable orders by mills that have low rates on freight to points of delivery.

Merchant Steel.—New orders and specifications in November have shown a material increase over last month, the heavier buying being induced, no doubt, by the lower prices ruling. One leading mill reports that its shipments in November were 20 per cent. larger than in October. We quote: Iron finished tire, 1½ x ⅜-in. and larger, 1.15c., base; planished tire, ⅛-in. and larger, 1.35c.; channel tire, ¾, ⅞ and 1-in., 1.65c.; toe calk, 1.70c., base; flat sleigh shoe, 1.25c.; concave or convex, 1.55c.; cutter shoe tapered or bent, 2.15c.; spring steel, 1.75c.; machinery steel, smooth finish, 1.50c., all f.o.b. at mill.

Railroad Spikes.—An Eastern railroad has sent in specifications for 5000 kegs of spikes on which prompt shipments are being urged. Inquiries from the railroads are better now than for some time. We continue to quote $1.40 base for standard sizes in carload and larger lots, f.o.b. Pittsburgh.

Rivets.—Makers report that the new demand and specifications against contracts are coming in at a more satisfactory rate than for some time, and that they have more actual orders on their books for shipment than for some months. We quote structural rivets at 1.45c. to 1.50c. and boiler rivets at 1.55c. to 1.60c., f.o.b. Pittsburgh. On a very desirable order for large tonnage, these prices might be shaded $1 a ton.

Shafting.—New orders and specifications are coming from the automobile builders and implement makers at a heavier rate than at any time for some months. The shipments of shafting by the mills in November are showing a material increase over October. We quote cold-rolled shafting at 65 per cent. off in carloads and larger lots and 60 and 10 per cent. off in small lots, delivered in base territory.

Spelter.—Prices continued to climb and prime Western grades are quoted to-day at 6.75c. to 6.80c., East St. Louis, the freight rate to Pittsburgh being 12½c. per 100 lb.

Wire Products.—The present condition in the wire and wire nail trades is very unsatisfactory, the new demand being dull and only for small lots to cover actual needs. It is evident that there is a large overcapacity for production, and with the present light demand none of the wire nail mills is operating to more than 50 to 60 per cent. of capacity. We quote wire nails at $1.50 to $1.55; cut nails, $1.45 to $1.50; galvanized barb wire, $1.80 to $1.85; painted, $1.50 to $1.55; annealed fence wire, $1.30 to $1.35, and galvanized fence wire, $1.60 to $1.65, f.o.b. Pittsburgh, usual terms, freight added to point of delivery.

Merchant Pipe.—Effective Friday, December 1, a reduction of one point, or $2 a ton, will be made on black and galvanized butt weld pipe, and two points, or $4 a ton, on black and galvanized lap weld pipe. No change in prices will be made on extra strong or double extra strong pipe, and the guarantee that has heretofore been given on pipe will be removed after November 30, the statement being made that it has served its purpose. A California gas interest is in the market for 100 miles of 12-in. pipe. New demand and specifications for merchant pipe during November have been slightly heavier than in October. Leading mills are operating at 60 to 70 per cent. of capacity.

Tubes.—The new demand for both locomotive and merchant tubes is showing betterment. Orders sent to the mills for rolling during November have been heavier than in any previous month this year. Some fairly large orders for locomotive tubes have been placed in the past week or two and several large inquiries are in the market. Prices on locomotive tubes continue to be more or less shaded.

Coke.—Some large contracts for furnace coke for first half and others for all of next year have been closed and more are pending. Most of this coke is going to the Mahoning and Shenango valleys, but a good part of it is for Eastern consumers. Among the contracts for strictly Connellsville furnace coke were 12,000 tons per month for all of next year at $1.65, per net ton, at oven, and 7000 tons per month for all of next year at $1.75. The high price on the latter contract is explained by the fact that the consumer wants a make of coke he has used for several years, and also it runs very low in sulphur. Contracts for 8000 tons per month have been made for all of next year to a Mahoning Valley furnace interest at $1.70; 10,000 tons per month for first six months, at $1.60; 12,000 tons a month for all the year at $1.60, and 15,000 tons per month for all the year at $1.60. Two contracts for furnace coke, one for 9000 tons and the other for 12,000 tons per month, the latter for Eastern shipment, have been made on a sliding scale, based on the price of Bessemer iron, i. e., so many tons of coke for one ton of Bessemer iron. We also note a sale of 18,000 tons of coke per month for 1912 on a sliding scale contract, based on nine tons of coke for one ton of Bessemer iron, with a minimum price of $1.60 for the coke. Several other large contracts for furnace coke will likely be closed within the next week or two. Contracts for strictly Connellsville 72-hr. foundry coke have been made for the first half of 1912, one at $2.10 and another at $2.15, and two contracts at $2.25 per net ton at oven. Some grades of foundry coke, not so high in quality as called for in these contracts, are being sold as low as $2 per net ton at oven for the first half of 1912. One leading coke interest reports that practically its entire output of furnace coke for the first half of 1912 is under contract. It is expected that the placing of this large business in furnace coke may have the result of making prices firmer, as $1.60 for all of next year is regarded as a low figure, in view of the fact that there is not much prospect of lower wages in the coke regions. Standard makes of furnace coke for spot shipment are still being offered at $1.50 at oven, and we note a sale of 85 cars for spot shipment at that price. We quote standard makes for December shipment at $1.50 to $1.55; for first half of next year at $1.60, and for all of next year at $1.60 to $1.65, per net ton at oven; standard makes of 72-hr. foundry coke for spot shipment, $1.85 to $2, and for first half of next year at $2.10 to $2.25, to consumers.

Scrap.—The Charles Dreifus Company, dealer in iron and steel scrap, Oliver Building, in this city, has bought from a Youngstown steel interest about 15,000 tons of high grade heavy steel scrap. An embargo has been placed on scrap routed for the Pittsburgh Steel Company, Monessen, Pa. Local dealers report that very little of the scrap offered in the list of the Pennsylvania Railroad, which closed last week, was awarded, the prices offered being so low that the road refused to accept them. The tone of the scrap market is possibly a little firmer, and a noticeable feature is that it is as

hard for dealers to buy heavy steel scrap at present prices as it is to sell it. Consumers are taking in a moderate amount of material, but their purchases in the past week have been light. As noted in previous reports the Jones & Laughlin Steel Company has recently been a heavy purchaser of steel scrap, consisting of billet and rail ends, plate shearings, etc., cut to charging box sizes, for which it has paid as high as $12.50, delivered. We make a range of 50c. per ton on our quotations on heavy steel scrap, the higher price being for selected stock and cut into charging box sizes. Dealers are quoting as follows per gross ton, f.o.b. Pittsburgh, unless otherwise noted:

Heavy steel scrap, Steubenville, Follansbee, Sharon, Monessen and Pittsburgh delivery	$12.00 to $12.50
No. 1 foundry cast	11.75 to 12.00
No. 2 foundry cast	10.75 to 11.00
Bundled sheet scrap, f.o.b. consumers' mill, Pittsburgh district	10.25 to 10.50
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	12.50 to 12.75
No. 1 railroad malleable stock	11.25 to 11.50
Grate bars	9.00 to 9.25
Low phosphorus melting stock	15.25 to 15.50
Iron car axles	20.50 to 21.00
Steel car axles	16.00 to 16.25
Locomotive axles	22.00 to 22.50
No. 1 busheling scrap	11.00 to 11.25
No. 2 busheling scrap	7.00 to 7.25
Old car wheels	12.00 to 12.25
*Cast iron borings	8.25 to 8.50
*Machine shop turnings	8.75 to 9.00
†Sheet bar crop ends	13.75 to 14.00
Old iron rails	14.50 to 14.75
No. 1 wrought scrap	12.00 to 12.25
Heavy steel axle turnings	9.75 to 10.00
Stove plate	9.00 to 9.25

*These prices are f.o.b. cars at consumers' mills in the Pittsburgh district.
†Shipping point.

Chicago

CHICAGO, ILL., November 29, 1911.—*(By Telegraph.)*

Pig Iron.—The local market is decidedly more active, as evidenced by a much larger volume of inquiry. Improvement is also noted in the number of sales and in the size of the orders placed. Evidence is lacking, however, that any large buying movement is under way and conditions in general do not support the belief that large tonnages have been purchased here. A number of lots of Northern basic have been sold, including one of 1000 tons to a South Milwaukee manufacturer. Malleable foundries are displaying a real interest in buying, and the demand for other foundry grades, while less noticeable, contributes to a generally improved situation in which Southern iron is considerably less active than Northern. Comparative prices of iron from the South and from the North are such that Southern iron can scarcely enter into opposition with Chicago or north of it, while in that portion of the Chicago territory where an advantage still obtains for Southern iron buying has been and is still restricted. We quote for Chicago delivery, except for local irons, which are f.o.b. furnace, the following prices on prompt shipments:

Lake Superior charcoal	$16.50 to $17.00
Northern coke foundry, No. 1	14.50 to 15.00
Northern coke foundry, No. 2	14.00 to 14.50
Northern coke foundry, No. 3	13.50 to 14.00
Northern Scotch, No. 1	16.00
Southern coke, No. 1 foundry and No. 1 soft	14.85
Southern coke, No. 2 foundry and No. 2 soft	14.35
Southern coke, No. 3	14.10 to 14.35
Southern coke, No. 4	13.85 to 14.10
Southern gray forge	13.60 to 13.85
Southern mottled	13.60 to 13.85
Malleable Bessemer	14.35 to 14.50
Standard Bessemer	17.00
Basic	14.75
Jackson Co. and Kentucky silvery, 6 per cent	16.40
Jackson Co. and Kentucky silvery, 8 per cent	17.40
Jackson Co. and Kentucky silvery, 10 per cent	18.40

(By Mail.)

While the orders being received for the various finished steel products are not very well balanced, the absence of steel rail specifications being especially noticeable, the aggregate tonnage is decidedly large and in many instances above normal. From this standpoint the situation is nearly all that could be desired and a continuance of the current volume of business from now until the first of January will remedy the unsatisfactory phase of the situation, namely, prices. Concessions and price irregularities and the general market level remain practically at the extreme point. If it were not tempered by the deplorable price situation the tone of the market would be distinctly optimistic. The belief is growing that a real and continued improvement may now be anticipated. Plate tonnage has piled up on the mills in this district, particularly sheared plates. Steel bars have followed closely and specifications for structural material are being received steadily. Recent car orders are the source of the major portion of these specifications. A large aggregate of rail tonnage is under consideration, although probably not more than 75,000 tons may be considered as actually in the market. Some additional car business was placed during the week, but the larger inquiries are still open. Steel and malleable iron foundries are beginning to feel the impetus of car orders, as inquiry for basic and malleable iron, both Northern and Southern, has been active. The local market for old material displays a much firmer attitude on the part of dealers and the prices paid to the railroads on recent scrap lists indicate that an advancing market is anticipated. Consumers are declining to pay any advance over current quotations and are restricting themselves accordingly to such small purchases as can be picked up at these prices.

Rails, Track Supplies and Railroad Equipment.—A round tonnage of rails is said to be under consideration by a number of the Western roads and, in addition to the 40,000 tons for the Great Northern, the San Antonio & Aransas Pass is inquiring for 20,000 tons. Several smaller inquiries have been received but the railroads seem to be in no haste to purchase. The Committee on Rail Specifications, composed of engineers from both the railroads and manufacturers, has been in session the past week and its conclusions regarding specifications are reported to be incidental to the placing of certain large orders. Specifications for track supplies, including bolts, spikes and rail joints, have begun to appear in larger volume and bookings are heavy. New orders for cars the past week were, with the exception of those purchased by the Canadian Pacific, unimportant. That railroad bought 4500 box cars, of which 2500 will be built by the Canadian Car & Foundry Company, 1000 by the Pressed Steel Car Company and 1000 by the American Car & Foundry Company. A number of new inquiries developed. The Chicago & Northwestern, in addition to the 3300 cars for which it is inquiring, is in the market for 75 locomotives. The Harriman Lines are figuring on 12,000 to 40,000 cars and the Santa Fé on 8000. The Castle Valley Coal Company expects to buy 200 all-steel coal cars; the Live Poultry Transportation Company, Chicago, is in the market for 250 steel underframe poultry cars, and the San Antonio & Aransas Pass is inquiring for 100 steel underframes. The Pullman Company and the American Car & Foundry Company have been recipients of several small orders for miscellaneous types of cars, while a number of similar inquiries remain unplaced, particularly that of the Illinois Central. We quote standard railroad spikes at 1.50c. to 1.55c., base; track bolts, with square nuts, 2c. to 2.10c., base, all in carload lots, Chicago; standard section Bessemer rails, 1.28c.; open hearth, 1.34c.; light rails, 40 to 45 lb., 1.16c. to 1.20½c.; 30 to 35 lb., 1.19½c. to 1.24c.; 16, 20 and 25 lb., 1.20½c. to 1.25c.; 12 lb., 1.25c. to 1.30½c.; angle bars, 1.50c., Chicago.

Structural Material.—Contracts carrying 2370 tons of structural steel were awarded for fabrication the past week. Of these the largest item was 1056 tons for an addition to the Oregon Hotel, Portland, Ore., taken by Milliken Bros. The American Bridge Company will furnish 500 tons of girder spans for the Chicago, Burlington & Quincy Railroad, and the Lackawanna Bridge Company took orders for 405 tons of bridge material for the Chicago, Indianapolis & Louisville Railroad. The Hansell-Elcock Company, Chicago, will supply 272 tons for a Crane Company's building in this city. The Riter-Conley Mfg. Company, Pittsburgh, will build 80 transmission poles for the Southern California Edison Company, for which 137 tons is required. Mill specifications for plain material continue active, the major portion of the orders coming from car builders. Prices are without change and we quote for plain material, Chicago delivery, mill shipment, 1.33c., and from jobbers' stocks 1.60c.

Plates.—Except to increase the volume of unfilled orders, the past week has brought little change in the market situation. Local mills are more than sold up for the immediate future, although they are still eager for business. It has been necessary to run the Gary universal mill on sheared plates, and the lack of shearing capacity has curtailed the capacity of this mill. Despite the heavy bookings, prices have failed thus far to respond, and we continue to quote for Chicago delivery, mill shipment, 1.33c., and from jobbers' stocks 1.60c.

Sheets.—The volume of business in sheets continues to be very good and local mills are running as full as at any time. The market shows no improvement, however, as regards prices, and irregularities are the rule. So far as possible, this market is seeking to keep for itself all the business emanating in this territory, but, to do so, concessions are usually required. Little im-

provement can be hoped for until a still larger volume of business develops. We quote Chicago prices as follows: Carload lots, from mill, No. 28 black sheets, 2.03c. to 2.08c.; No. 28 galvanized, 3.03c. to 3.08c.; No. 10 blue annealed, 1.53c. to 1.58c. Prices from store, Chicago, are: No. 10, 1.90c.; No. 12, 1.95c; No. 28 black, 2.30c.; No. 28 galvanized, 3.35c.

Bars.—Steel bars continue to be one of the weak elements in the market, and the tendency of manufacturers to turn to steel, when prices are as low as at present, has restricted the volume of bar iron sales. The tonnage placed during the week, although large, seems not to have diminished competitive effort for orders, and price concessions are as extreme as at any time. We quote as follows, f.o.b. Chicago: Soft steel bars, 1.18c. to 1.33c.; bar iron, 1.15c. to 1.20c.; hard steel bars rolled from old rails, 1.15c. to 1.20c. From store: Soft steel bars, 1.55c. to 1.60c., Chicago.

Wire Products.—Although the efforts of producers directed toward acquiring tonnage through price concessions in the past few weeks have brought about some increase in the volume of business, the wire market continues soft and irregular. There remains, apparently, a need for much heavier business before the situation from the standpoint of the mills can be considered satisfactory. Wire nails and plain wire are being subjected to the greatest pressure. Wire for fence and other manufactured products is moving more actively as the result of preparations for spring trade. Plain wire, No. 9 and coarser, base, $1.58; wire nails, $1.78; painted barb wire, $1.78 to $1.83; galvanized, $2.08 to $2.13; polished staples, $1.78 to $1.83; galvanized, $2.08 to $2.13, all Chicago.

Cast Iron Pipe.—In the West, particularly throughout the intermountain and Pacific coast territory, a considerable volume of pipe business is reported under consideration, pending the settlement of freight rates, some of which have already been reduced. Current lettings during the week were small. It is anticipated that the contract at Muskegon, Mich., which has been delayed from week to week, will be placed at once; a decision having been reached regarding the use of steel or cast iron pipe. At Hubbard, Ohio, a contract for 500 tons will be awarded December 2. We quote as follows, per net ton, Chicago: Water pipe, 4-in., $26.50; 6 to 12-in., $24.50; 16-in. and up, $24, with $1 extra for gas pipe.

Old Material.—The influence of the large tonnage of finished material orders recently placed is very apparent as regards the local market for scrap. To the dealers the prospect of a rising market is in sight, and they, accordingly, have bought recent railroad offerings at prices above current quotations, and, in turn, are declining to sell to consumers except at an advance. Manufacturers, on the other hand, decline to admit that an advance in the price of old material is warranted in view of the low prices obtaining on new material. This applies more particularly to rolling mill scrap, foundry grades being in demand. They are, therefore, restricting their purchases to such quantities as can be picked up at current quotations. A local wheel maker is in the market for 1000 to 5000 tons of car wheels, for which a price of $13 delivered is offered. Railroad scrap lists are offered by the Chicago, Rock Island & Pacific and the Chicago, Burlington & Quincy, the former to the amount of 3000 tons. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, per gross ton, as follows:

Old iron rails	$14.50 to $15.00
Old steel rails, rerolling	12.25 to 12.75
Old steel rails, less than 3 ft	10.75 to 11.25
Relaying rails, standard section, subject to inspection	24.00
Old car wheels	12.50 to 13.00
Heavy melting steel scrap	9.50 to 10.00
Frogs, switches and guards, cut apart	9.50 to 10.00
Shoveling steel	9.00 to 9.50
Steel axle turnings	8.00 to 8.50

The following quotations are per net ton:

Iron angles and splice bars	$11.75 to $12.25
Iron arch bars and transoms	13.00 to 13.50
Steel angle bars	9.00 to 9.50
Iron car axles	16.75 to 17.25
Steel car axles	15.00 to 15.50
No. 1 railroad wrought	10.25 to 10.50
No. 2 railroad wrought	9.25 to 9.50
Steel knuckles and couplers	9.25 to 9.75
Steel springs	9.50 to 10.00
Locomotive tires, smooth	13.50 to 14.00
Machine shop turnings	5.75 to 6.25
Cast and mixed borings	5.00 to 5.50
No. 1 busheling	8.00 to 8.50
No. 2 busheling	5.75 to 6.25
No. 1 boilers, cut to sheets and rings	6.50 to 7.00
Boiler punchings	12.00 to 12.50
No. 1 cast scrap	10.50 to 11.00
Stove plate and light cast scrap	8.75 to 9.25
Railroad malleable	9.50 to 10.00
Agricultural malleable	8.50 to 9.00
Pipes and flues	7.00 to 7.50

Philadelphia

PHILADELPHIA, PA., November 28, 1911.

Railroad purchases continue to exert a favorable influence on the situation. Pig iron producers are particularly encouraged by the greater amount of inquiry for foundry grades for forward delivery. Competition in finished iron and steel is still strong, and, while no new levels have been established, recent concessions are more generally quoted as open prices. The tendency, however, is to make quotations on a basis that may govern each individual condition, thus resulting in a rather wide range of prices. Few Eastern mills have made any material tonnage gains during the week. Billets are quiet and prices lack strength. The good demand for sheets continues. Foundry coke is a trifle more active. A shade better movement in some grades of old material is noted, but, while the market is sentimentally stronger, no price changes of importance are reported.

Iron Ore.—Consumers are feeling round a little to get a line on prices for next year's delivery. For near future requirements furnaces in this district need very little ore, although some would no doubt take on small lots if prices were such as to enable them to use the ore advantageously. Importations during the week include 5600 tons of New Brunswick, 4090 tons of Swedish and 5600 tons of Cuban ore.

Pig Iron.—Central Pennsylvania producers have, in a measure, been setting the pace in connection with prices of foundry grades in this district, particularly when any quantity was involved. Some of these producers, selling No. 2 X at $13, furnace, with a freight rate of $1.85, have been making a delivered price that Eastern furnaces have been compelled to meet or lose trade from regular customers. Several 1000-ton lots have been closed recently on that basis. Competition between producers in this immediate territory is not so sharp, and the bulk of current sales, involving lots up to a few hundred tons, have been made at $15, delivered, while there is a fair amount of non-competitive business going at $15.10 to $15.25 for eastern Pennsylvania No. 2 X. Purchases of large blocks of low-grade iron by cast iron pipe makers continue the feature. A large lot of Northern pipe iron was sold at $14.25, delivered, while other good purchases have been made at $14, and in instances this price is reported to have been shaded. The aggregate volume of business in the foundry grades has been considerably larger and the trade is more encouraged with the outlook, particularly in view of the greatly increased inquiry for forward delivery. The larger buyers are coming into the market more freely, the Baldwin Locomotive Works being out with an inquiry for 6000 tons, and the Pennsylvania Railroad is getting prices on 5000 tons for first quarter delivery. Others are asking for 1000-ton lots or larger. The cast iron pipe foundries are still inquiring for a total of 20,000 to 25,000 tons. Outside of the low-grade iron going to pipe foundries, little movement in Southern iron is reported in this district. Virginia foundry irons are not moving very freely; small and moderate lots for early delivery are selling at $12.25 to $12.50, furnace. The demand for forge iron appears to be at a standstill. No demand for basic iron is reported; this grade is now being pretty firmly held at $14.50, delivered. Of standard analysis low phosphorus iron, little has been taken by melters in this district, although a fair quantity has been sold for shipment West; prices continue weak. The following range of prices is named for deliveries in buyers' yards in this district, shipment extending over the next four months:

Eastern Pennsylvania No. 2 X foundry	$14.85 to $15.25
Eastern Pennsylvania No. 2 plain	14.60 to 15.00
Virginia foundry	15.00 to 15.50
Gray forge	14.25
Basic	14.50
Standard low phosphorus	19.25 to 19.50

Ferroalloys.—Notwithstanding the fact that the principal sellers maintain and have sold small lots of 80 per cent. ferromanganese at $38.50, Baltimore, principally for Western delivery, a sale of a small lot at $1 under that figure is reported, indicating that all the speculative material has not yet been cleaned up. Fifty per cent. ferrosilicon is held at $68, delivered, but no business has been reported; little demand for 10 to 12 per cent. is noted and prices are reported unchanged.

Billets.—The situation regarding prices is somewhat complex. Some show of firmness was made by Eastern makers a week ago, but they have again receded to the recent $19, Pittsburgh, base for basic open-hearth rolling billets, equal to $21.40, delivered here, but contend that they will not meet the new basis of $18.50 or $20.90, delivered in this vicinity, named by some of the Western mills. Business in this district is small and

the market has not been seriously tested. Forging billets are moderately active, but prices are weak, and while quotations are $26.40 to $27.40, delivered, the minimum price can probably be shaded 50 cents a ton on desirable specifications.

Plates.—Sharp competition between Eastern mills for business in what is considered their natural territory is noted. While no further concessions are reported, the lower range of prices is more generally quoted, particularly if the quantity involved is desirable. Few Eastern mills meet the extreme prices named by Western mills, with the result that the bulk of the larger orders have gone to the latter. There is a decidedly better demand on the part of consumers who are anxious to anticipate their requirements for the first quarter and half of next year, but Eastern mills, as a rule, refuse to consider such business at present prices. Mills are not operating much better than 50 per cent. of capacity. Prices show a rather wide range, as low as 1.25c. having been done in sharp competition for desirable orders, but for the general run of current business quotations range from 1.30c. to 1.35c., delivered here.

Structural Material.—The demand appears quieter and competition for what little business is offered is sharper. Bids are in for 1800 tons of structural material for the Stock Exchange Building, while specifications are being completed for the new Manufacturers' Club, for which about 2000 tons will be required. Some little bridge and boat material is pending, but closes slowly. Eastern mills are, as a rule, meeting Western quotations for plain shapes, 1.25c., delivered here, being named in sharp competition, although quotations for small current orders are 1.30c. to 1.35c.

Coke.—A trifle better demand, particularly for foundry coke, is noted. Small contracts for delivery up to April 1 are reported, but few sellers being willing to make more extended commitments, owing to the uncertainty regarding spring labor difficulties in the coal fields. Beyond some small spot transactions little movement in furnace coke is reported. Practically nothing in contract furnace coke has recently been done. Quotations are unchanged, the following range of prices per net ton being named for deliveries in buyers' yards in this district:

Connellsville furnace coke	$3.65 to $4.05
Foundry coke	4.15 to 4.50
Mountain furnace coke	3.40 to 3.65
Foundry coke	3.95 to 4.40

Old Material.—An air of greater confidence in the situation prevails, although in very few instances have prices been affected. Transactions are still closely confined to small lots, with sellers less inclined to dispose of their holdings. Heavy melting steel of prime grade has been purchased at $12, delivered, one mill taking on about 1500 tons, while another melter bought small lots of yard steel at $11.50, delivered. No. 1 wrought iron has been more freely taken, usually, however, in small lots, and prices of this grade show a slight upward movement. Car wheels and stove plate have also been in more active demand. The following range of prices about represents quotations at which the ordinary current business for prompt shipment can be done for delivery in buyers' yards, eastern Pennsylvania and nearby points, taking a freight rate from Philadelphia varying from 35c. to $1.35 per gross ton, for shipment ranging from prompt to the remainder of the year:

No. 1 heavy melting steel scrap	$11.50 to $12.00
Old steel rails, rerolling (nominal)	13.00 to 13.50
Low phosphorus heavy melting steel scrap	15.50 to 16.00
Old steel axles	17.00 to 17.50
Old iron axles	21.00 to 21.50
Old iron rails	15.50 to 16.00
Old car wheels	11.50 to 12.00
No. 1 railroad wrought	14.25 to 14.75
Wrought iron pipe	10.75 to 11.25
No. 1 forge fire	9.50 to 10.00
No. 2 light iron (nominal)	6.00 to 6.50
Wrought turnings	8.00 to 8.25
Cast borings	7.50 to 7.75
Machinery cast	12.25 to 12.75
Railroad malleable (nominal)	11.00 to 11.50
Grate bars, railroad	9.25 to 9.75
Stove plate	9.25 to 9.75

Sheets.—The demand has been fully maintained and Eastern mills continue to operate at full capacity. Order books are in comparatively good shape, buyers placing business more freely and in better quantity, and would contract for extended delivery if mills would accept business of that character. The improved demand does not appear to have materially affected prices, 2c. to 2.05c., delivered here, being named for No. 28 Western sheets, while Eastern mills, making smooth loose rolled sheets, obtain ¼c. to ½c. per lb. advance for such material for early delivery.

Bars.—While some effort is being made to establish a 1.25c., delivered, basis for steel bars, business has been done at 1.20c. when any quantity was involved. Iron bars have developed a trifle more strength, although not quotably higher; concessions are not so readily obtainable and quotations are comparatively firm at 1.20c. to 1.25c., delivered in this vicinity.

The Charles Dreifus Company, iron and steel scrap, formerly located at 501 Pennsylvania Building, Philadelphia, has removed to suite 518 in the same building.

Cleveland

CLEVELAND, OHIO, November 28, 1911.

Iron Ore.—Merchant ore firms regard the outlook as very promising for a good volume of business in ore during the coming year. Sales early in 1910 for that season's delivery were far in excess of the needs of consumers, and many furnace interests had enough ore left over last year to last them through the greater part of this year. With good stocks on hand and the business outlook not satisfactory early this year consumers bought sparingly and some waited until late in the summer before placing orders for what they would require up to the opening of navigation in 1912. Because of this conservative buying ore sellers believe that stocks will be fairly well cleaned up by the opening of next season and that good orders will be booked during the spring. The quantity of ore on the lower lake docks December 1 is expected to be nearly as large as a year ago. We quote prices as follows: Old range Bessemer, $4.50; Mesaba Bessemer, $4.25; old range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

Pig Iron.—Quite an active buying movement in Northern foundry pig iron has developed in this market. During the week a large aggregate tonnage was sold for delivery in the northern Ohio territory in lots ranging from 200 to 1000 tons. Some of this iron was for delivery through the first quarter, but the greatet part was for the first half. Round sales outside of this immediate territory include 5000 tons, about half each of foundry and gray forge iron, to the Detroit plant of the American Car & Foundry Company for early delivery, and one 2000-ton lot. The buying of Southern iron is also quite active. The largest seller of Southern grades reports that its November sales exceed those of any previous month this year, and a similar report is made by a large local selling agency in Northern iron. A good volume of inquiries is still pending. Among the sales we note the following: 1000 tons of Northern and 500 tons of Southern to an Ohio stove plant, 500 tons of Northern and 500 tons of Southern to another Ohio stove maker, 1000 tons of Northern and 500 tons of Southern to a Mansfield manufacturer, 600 tons each each of Northern and Southern to a Canton foundry, 500 tons of Northern to a northern Ohio foundry, 600 tons of Northern and Southern to a gas engine builder and 1500 tons of Northern and Southern in Ft. Wayne, Ind.—all of the above being for the first half. A northern Ohio implement manufacturer also bought considerable Southern iron for the first half. A manufacturer near Cleveland has bought 500 tons of No. 1 Northern for the remainder of the year and the first half. An Erie, Pa., engine builder has bought 1000 tons of No. 2 foundry for the first half and some other business has been closed in Erie. A Cleveland foundry has an inquiry out for 1500 tons of Southern for the first half and a sanitary interest down the State is in the market for about the same tonnage of Northern and Southern for the same delivery. The United Steel Company, Canton, Ohio, has just closed for 1000 tons of basic for early delivery. A Toledo malleable foundry wants 200 tons of malleable for December and 1500 tons for the first half. Another inquiry is for 500 tons of Southern charcoal. The improved demand for foundry grades has not resulted in any change in the price situation. One local producer is selling No. 2 foundry at $12.75, for delivery throughout the first quarter, but some round lots have been sold at $13 to $13.25, Cleveland furnace, for delivery through the first half. We quote as follows for prompt shipment and for the first quarter, delivered Cleveland:

Bessemer	$14.90 to $15.15
Basic	13.25
Northern foundry, No. 2	13.25
Gray forge	12.50
Southern foundry, No. 2	14.35
Jackson County silvery, 8 per cent. silicon	$16.55 to 17.05

Coke.—Some large contracts for furnace coke are expected to be closed shortly. In foundry coke some contracts are being made for next year's supply. Two large local foundries have contracted for Stonega

Virginia coke. We quote standard Connellsville furnace coke at $1.55 to $1.60 for the remainder of the year and $1.65 to $1.70 for the first half. Connellsville foundry coke is held at $1.90 to $2.15 for prompt shipment and $2.15 to $2.40 for contract.

Finished Iron and Steel.—Stimulated by the prevailing low prices the demand in finished lines has become more active and the aggregate tonnage booked in the week was quite large. Many consumers who have carried low stocks for a long time are taking advantage of the low prices to stock up, and others who feel that prices will go no lower are eager to place contracts foi their first quarter or first half requirements. There is a good demand for steel bars, which are selling at 1.05c., Pittsburgh, for round lots, although some mills are making a minimum quotation of 1.10c. Good plate orders are coming in, the general market price on large business being 1.10c. There is a fair demand for structural material, considerable sales having been made for specific work. Structural material is quoted at 1.10c., Pittsburgh, for round lots and desirable specifications. While low prices have not yet brought out much business for building work considerable tonnage of this sort is in prospect. The American Shipbuilding Company has received an order from the Hall Coal Company, Ogdensburg, for a boat of the Welland Canal size for the coal trade, for which 1200 tons of plates and shapes will be furnished by the Carnegie Steel Company. The Wellman-Seaver-Morgan Company, Cleveland, has placed an order for 1500 tons of plates, shapes and steel bars for the new coal handling plant to be erected at Ft. William, Ont., for the Canadian Pacific Railroad. This contract will also require 600 tons of Bethlehem sections. The demand for sheets is fairly good, but prices are low. Some mills are making a minimum quotation of 1.80c. for No. 28 black and 2.80c. for No. 28 galvanized. The demand for rivets shows considerable improvement with no change in prices. The demand for iron bars is light. We quote iron bars at 1.20c., Cleveland mill.

Old Material.—There is little activity in the scrap market. Sales during the week were all in small lots, about the only demand being for heavy steel scrap, for which the ruling price is $11. Local mills seem to be fairly well supplied for the present, and local dealers are not figuring on tonnage for outside shipment. Prices are fairly firm with no change in quotations. Dealers are unwilling to sell out of stock at current prices. Dealers' prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails, rerolling	$12.25 to $12.75
Old iron rails	14.00 to 14.50
Steel car axles	17.00 to 17.50
Heavy melting steel	11.00 to 11.25
Old car wheels	11.50 to 12.00
Relaying rails, 50 lb. and over	22.50 to 23.50
Agricultural malleable	10.50 to 11.00
Railroad malleable	11.00 to 11.25
Light bundled sheet scrap	9.50 to 10.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles	$18.50 to $19.00
Cast borings	6.00 to 6.25
Iron and steel turnings and drillings	6.50 to 6.75
Steel axle turnings	7.25 to 7.75
No. 1 busheling	9.00 to 9.50
No. 1 railroad wrought	11.00 to 11.25
No. 1 cast	11.00 to 11.50
Stove plate	9.00 to 9.25
Bundled tin scrap	11.00 to 11.50

Cincinnati

CINCINNATI, OHIO, November 29, 1911.—*(By Telegraph.)*

Pig Iron.—The general tone of the market is more cheerful, but prices are soft, especially on Southern iron for prompt shipment. However, the lower grades are scarce and the usual difference in quotations is not generally observed. Malleable shows considerable activity; for first half shipment a northern Ohio manufacturer and a Missouri melter are inquiring for 1500 and 2000 tons respectively, and for first quarter movement a southern Ohio consumer is reported to have taken 3000 tons at $13, Ironton. Inquiries for Southern foundry iron are more numerous, and two Indiana melters are getting prices on about 1000 tons each, shipments to run through March of next year. A local manufacturer also wants for the same delivery 600 tons running 2 per cent. and over in silicon. Sales include 400 tons of No. 2 foundry booked at $10, Birmingham. for first half shipment. There has also been considerable first quarter and prompt business taken at this same figure. Northern No. 2 foundry is stationary at $13 for any shipment up to July 1, though in a few instances it is rumored that this figure had been shaded on a few prompt shipment orders. A central Ohio melter recently bought 1800 tons of basic to be shipped during the first half, and a southern Ohio rolling mill is expected to close soon for 20,000 tons for shipment in the next six months. Based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, we quote, f.o.b. Cincinnati, as follows for prompt shipment:

Southern coke, No. 1 foundry and 1 soft	$13.75 to $14.00
Southern coke, No. 2 foundry and 2 soft	13.00 to 13.50
Southern coke, No. 3 foundry	12.75 to 13.25
Southern coke, No. 4 foundry	12.50 to 13.00
Southern gray forge	12.50 to 13.00
Ohio silvery, 8 per cent. silicon	16.95 to 17.20
Lake Superior coke, No. 1	14.70 to 14.95
Lake Superior coke, No. 2	14.20 to 14.45
Lake Superior coke, No. 3	13.70 to 13.95
Basic, Northern	14.20 to 14.45
Standard Southern car wheel	25.50 to 25.75
Lake Superior car wheel	19.00

(By Mail.)

Coke.—Foundry coke is in a little better demand; three consumers in the Central West are feeling around for a future supply with the total tonnage estimated around 12 cars a week. Contract shipments of both foundry and furnace grades are excellent, but new orders for furnace coke are limited to small supplies for domestic use. Prices are a trifle firmer on furnace coke in the Connellsville district and $1.55 to $1.65 is quoted on prompt shipment business; Wise County and Pocahontas brands are bringing about the same figures, with the usual 10c. to 15c. higher demanded on future contracts. Foundry coke is unchanged in all three districts, and is quotable around $1.85 to $2 for prompt movement and from $2 to $2.25 for future shipment.

Finished Material.—The week begins with a reported improvement in several lines. Prices are also said to be steadier. No more than the regular run of small orders for structural material have been booked in the past few days, but, as previously reported, there is considerable business in sight here, some of which may develop before January 1. The local warehouse price on structural material is around 1.70c. and on steel bars 1.55c to 1.60c.

Old Material.—There is a better inquiry for several grades of scrap, but dealers are unable to obtain anything more than the regular selling quotations, with the possible exception of No. 1 cast scrap, which is said to be in better demand. Offerings are about keeping pace with sales, and yard stocks do not show that they are being diminished at any appreciable rate. The minimum figures given below about represent what buyers are willing to pay for delivery at their yards in southern Ohio and Cincinnati, and the maximum quotations the sellings prices f.o.b. at yards:

No. 1 railroad wrought, net ton	$9.50 to $10.25
Cast borings, net ton	4.50 to 5.00
Steel turnings, net ton	5.50 to 6.00
No. 1 cast scrap, net ton	9.50 to 10.50
Burnt scrap, net ton	6.25 to 6.75
Old iron axles, net ton	16.25 to 16.75
Bundled sheet scrap, gross ton	5.75 to 6.50
Old iron rails, gross ton	13.00 to 13.75
Relaying rails, 50 lb. and up, gross ton	20.75 to 21.50
Old car wheels, gross ton	9.50 to 10.25
Heavy melting steel scrap	9.25 to 10.00

Birmingham

BIRMINGHAM, ALA., November 25, 1911.

Pig Iron.—A lot of 1000 tons of No. 2 soft, for shipment in the first quarter, was sold early in the week at $10, Birmingham; later, two lots of 1000 tons each for shipment over the first half were sold at $10 for No. 2 foundry, and 1000 tons of analysis iron for first half shipment was sold at a slightly lower price. Of the smaller sales made in the week, a lot of 600 tons of No. 2 for spot shipment brought $10; 500 tons of Nos. 2 and 3, for shipment in the first quarter, brought $10 and $9.50, respectively; 60 tons of No. 1 sold at $10.50, while 150 tons of gray forge brought $9.25. In addition to the sales mentioned, an aggregate of smaller lots estimated at 5000 to 7500 tons was sold for delivery covering the next four to six months, one interest alone having sold an aggregate of 6500 tons in the week. The inquiry now pending involves a very satisfactory tonnage, and is such as to indicate that the provision for future requirements by the trade generally has been comparatively limited. The manufacturers of cast iron water pipe are negotiating for attractive tonnages, the manufacturers of smaller size cast iron pipe are also making inquiry, and the car wheel manufacturers have asked for prices on charcoal and special analysis iron. Specifications against contracts have increased in proportion with the increase in the demand for advanced

deliveries, and, as a result, the market for spot deliveries is unquestionably stronger. For the advanced deliveries, it can only be said that the producing interests are probably less willing to enter tonnage for the entire first half at the $10 schedule. It is noted that certain of the large concerns still refuse to open order-books for deliveries after the first quarter, and that in the case of two smaller ones no tonnage is offered for shipment after January 1. There has been no change in the rate of production of foundry iron and the capacity being operated on basic is being taken care of by local consumption.

Cast Iron Pipe.—The city of Portland, Oregon, is to award a contract December 12 for approximately 12,000 tons of water pipe, the announcement of which has had a decided tendency to strengthen this market. Local interests have within the week been awarded a fairly attractive tonnage of water pipe in small quantities, in addition to the requirement of some 2000 tons of gas pipe for the city of Birmingham, and, as a consequence, the active capacity is practically taken care of until February 1. Orders for certain sizes have recently been declined, and the aggregate accumulation of all sizes on local yards is considerably less than at this time one year ago. Quotations are unchanged, and by reason of the condition of local order books it is doubted if shading to any extent would obtain for additional large contracts. We quote water pipe as follows, per net ton f. o. b. cars here: 4 to 6 in., $23; 8 to 12 in., $22; 12 in. and over, $21, with $1 per ton extra for gas pipe. Special fittings are quotable at $45 to $50 per net ton at foundry.

Old Material.—This market is still without developments of especial interest, with all parties concerned disposed to follow a conservative course in the matter of purchases. Steel grades are slightly more in demand than last week and it is probable that slightly higher prices can now be had for light machinery cast. For heavy grades, however, there is practically no demand and prices are very uncertain. We continue to quote nominally as follows, per gross ton here:

Old iron axles (light)	$12.00 to $12.50
Old steel axles (light)	11.00 to 11.50
Old iron rails	11.00 to 11.50
No. 1 railroad wrought	9.50 to 10.00
No. 2 railroad wrought	8.00 to 8.50
No. 1 country wrought	6.00 to 6.50
No. 2 country wrought	5.50 to 6.00
No. 1 machinery cast	8.00 to 8.50
No. 1 steel	7.50 to 8.00
Tram car wheels	7.00 to 7.50
Standard car wheels	9.00 to 9.50
Light cast and stove plates	5.50 to 6.00

Finished Material.—Local mills report a liberal volume of specifications for bars and shapes in both steel and iron, while the movement of barb wire, wire fencing and wire nails is very satisfactory. The entire capacity at the Alabama City mill is in operation; the Bessemer mill continues to work a double shift, and the three small mills are well supplied with orders. There is very little demand for light rails.

Coke.—The local production of all grades will be somewhat larger this month than for October, but prices have not changed. Furnace coke is quotable at $2.30 to $2.50 per net ton at Birmingham district ovens, and 72-hr. foundry coke is quoted at $3.25 to $3.50.

St. Louis

ST. LOUIS, MO., November 27, 1911.

The appearance in the market of inquiries for deliveries beyond the first quarter of 1912 has served to encourage the furnace representatives still more, and, while the demand that exists has not led to any increases in price, there is a more confident feeling that there will be fair business, at least through the winter months and well into spring. The orders, as a rule, continue small in individual quantity, but the aggregate is good and the shipment requirements are immediate.

Pig Iron.—One agency reports 2500 tons for the week, made up of an aggregate of smaller lots, while others have booked orders from the Missouri Malleable Casting Company for 3000 tons of malleable in addition to the order of the same quantity previously reported. There is a considerable demand for the lower grades and about 1000 tons for mixing purposes is reported as sold during the week. The stove companies are coming in for supplies of material. The Bridge & Beach Mfg. Company took about 1200 tons of various grades. The Buck's Stove & Range Company is also in the market and has already taken a small lot for immediate requirements. The buying movement of the foundries is, however, regarded as not due to actual need but because of a belief that it is wise to supplement present supplies before the demand caused by the railroad orders sends prices up. Quite a number of inquiries for delivery beyond the first quarter is reported.

Coke.—The market for coke is quiet, the principal demand being for stock grades. The orders received lag somewhat behind the pig iron demand, showing that supplies in consumers' hands are not exhausted. Coke is going forward on specifications under contract in good quantity, but the new orders received are chiefly in carload lots for specific purposes and require immediate shipment.

Finished Iron and Steel.—In structural material the feeling is better, though the orders coming in are not large. Apparently customers are getting small jobs and hurrying them through. The price remains close to 1.10c. Practically no structural shapes are going into stock with the fabricators. Interest is developing in the prospect of another 21-story building, this for the Commonwealth Trust Company, requiring about 5000 tons. There is a good chance of both this and the Barr building, 10,000 tons, going through the first of the year. For standard rails the market is inactive because of the inability to conduct operations during the winter in construction work. In bars the prices are unsteady, though there has been no dropping off. A fair tonnage has been placed, chiefly for prompt delivery, mostly among the wagon and agricultural machinery manufacturers. Plates have been in fair demand, with the prices a bit weaker than at last report. The tonnage moved has been reasonably good. Track fastenings have been in good demand at firm prices.

Old Material.—The market for scrap shows a little better tone in all divisions except, perhaps, the relaying rail section, where the demand has fallen to almost nothing because of the absence of the lumber companies from the market. No lists came out during the week, but several are carded to appear soon after the first of the month. In general the dealers are hopeful of better things and if the weather turns cold enough, cutting off the gathering up of scrap, there are likely to be some lively increases in prices. Dealers' prices, f.o.b. St. Louis, per gross ton, we quote as follows:

Old iron rails	$12.50 to $13.00
Old steel rails, re-rolling	12.00 to 12.50
Old steel rails, less than 3 ft	10.50 to 11.00
Relaying rails, standard section, subject to inspection	21.00 to 21.50
Old car wheels	12.00 to 12.50
Heavy melting steel scrap	10.50 to 11.00
Frogs, switches and guards cut apart	10.50 to 11.00

The following prices are per net ton:

Iron fish plates	$10.50 to $11.00
Iron car axles	17.50 to 18.00
Steel car axles	15.50 to 16.00
No. 1 railroad wrought	10.75 to 11.25
No. 2 railroad wrought	9.75 to 10.25
Railroad springs	9.75 to 10.25
Locomotive tires, smooth	13.50 to 14.00
No. 1 dealers' forge	7.50 to 8.00
Mixed borings	5.50 to 6.00
No. 1 busheling	9.00 to 9.50
No. 1 boilers, cut to sheets and rings	7.50 to 8.00
No. 1 cast scrap	9.00 to 9.50
Stove plate and light cast scrap	7.50 to 8.00
Railroad malleable	8.00 to 8.50
Agricultural malleable	7.00 to 7.50
Pipes and flues	8.00 to 8.50
Railroad sheet and tank scrap	7.50 to 8.00
Railroad grate bars	7.00 to 7.50
Machine shop turnings	7.00 to 7.50

Boston

BOSTON, MASS., November 28, 1911.

Old Material.—The situation in New England has not changed. No transactions of importance are reported. The prices quoted below are those offered by the large dealers to the producers and to the smaller dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points, taking Boston rates from eastern Pennsylvania points. In comparison with Philadelphia prices the differential for freight of $2.30 a ton is included. Mill prices are approximately 50c. a ton more than dealers' prices:

Heavy melting steel	$9.50 to $10.00
Low phosphorus steel	11.45 to 11.95
Old steel axles	14.00 to 14.50
Old iron axles	17.00 to 18.00
Mixed shafting	12.75 to 13.25
No. 1 wrought and soft steel	10.50 to 10.75
Wrought iron pipe	8.75 to 9.00
Skeleton (bundled)	7.00 to 7.50
Cotton ties	7.00 to 7.50
No. 2 light	4.50 to 5.00
Wrought turnings	5.00 to 5.50
Cast borings	4.50 to 5.00
Machinery, cast	12.50 to 13.00
Malleable	9.25 to 9.75
Grate bars	6.00 to 6.50
Stove plate	8.00 to 8.50

Buffalo

BUFFALO, N. Y., November 28, 1911.

Pig Iron.—There has been a good deal of quiet buying during the week, and market conditions look better than at any time for several months. Sales for this territory in the week just ended have aggregated about 50,000 tons of foundry grades, 20,000 tons of malleable and some basic for spot, first quarter and first half delivery, and additional inquiry for 10,000 to 12,000 tons not yet placed. A small portion of the business placed was for export to Canadian consumers. New orders for prompt delivery and heavy shipments on current quarter contracts are depleting furnace stocks at an increasingly rapid rate, and one large interest reports practically nothing left on yards except a few hundred tons of special iron which is being held on orders already received. Competition from other districts keeps prices from reaching any higher level. Some furnaces, however, are turning down 1912 business except at the top prices of the ruling schedule on account of being practically booked to present capacity for delivery for the remainder of the year. One furnace interest reports the booking of 35,000 tons during November for delivery over the first quarter. For current quarter and first half delivery we quote as follows, f.o.b. Buffalo:

No. 1 X foundry	$13.75 to $14.00
No. 2 X foundry	13.25 to 13.75
No. 2 plain	13.25 to 13.50
No. 3 foundry	13.00 to 13.25
Gray forge	13.00
Malleable	13.50 to 14.00
Basic	14.00 to 14.25
Charcoal	16.25 to 17.25

Old Material.—There is continued improvement in the tone of the market. Inquiries are coming in more freely and considerable new business has developed in the week. Shipments on contracts are moving in increasing volume. A much better feeling exists among dealers generally, who anticipate a more pronounced increase in the amount of new business in the near future on account of the larger requirements in the production of material for the filling of railroad orders. We quote as follows per gross ton, f.o.b. Buffalo:

Heavy melting steel	$12.50 to $13.00
Low phosphorus steel	15.75 to 16.25
No. 1 railroad wrought	14.00 to 14.50
No. 1 railroad and machinery cast scrap	13.50 to 14.00
Old steel axles	18.50 to 19.00
Old iron axles	22.00 to 22.50
Old car wheels	12.25 to 12.50
Railroad malleable	12.25 to 12.75
Boiler plate	12.25 to 12.75
Locomotive grate bars	11.00 to 11.25
Pipe	9.25 to 9.50
Wrought iron and soft steel turnings	6.75 to 7.00
Clean cast borings	6.25 to 6.50

Finished Iron and Steel.—The change of sentiment for the better noted during the past two weeks has been emphasized in the week just closed and an improved underlying feeling is manifest. Buyers are showing increasing inclination to negotiate contracts. In place of maintaining an indifferent attitude they are taking rather an aggressive stand for purchasing material for delivery as far into next year as possible. They are meeting strong opposition from sellers in securing such contracts at to-day's prices at least beyond the first quarter; but quite a number of contracts for bars, plates and shapes has been closed for delivery limited to the first quarter. Current prices in this territory are 1.10c., Pittsburgh base, for bars and small shapes for immediate specification, and shipment at convenience of mills, and 1.15c. for desirable tonnage of structural shapes and plates. The usual asking price for small lots and less desirable bar offerings is 1.15c. and 1.20c. to 1.25c. for plates and shapes on orders of the same character. The week has shown considerable buying of nails and wire products for spring delivery. The Turner Construction Company has the contract to erect a 6-story reinforced concrete warehouse for the Keystone Warehouse Company, Buffalo, which will require 150 tons of reinforcing bars, and Stewart & Co., Chicago, have the contract for the Kellogg elevator addition, this city, requiring 100 tons of reinforcing bars. The Canadian export trade is fair and many buyers are showing a disposition to make contracts for requirements well into next year. Business in fabricated structural material continues to be very active for the season, and some fabricators anticipate there will be a strengthening of prices by or before the end of the year. The Charles F. Ernst Sons Iron Works, Buffalo, was low bidder for the 735 tons of steel required for the remodeling of the Sixty-fifth Regiment Arsenal for use as a city convention hall and exposition building, and the Buffalo Structural Steel Company has received the contract for the fabrication and erection of the steel for the Niagara Storage Company's warehouse addition, 175 tons, and for the steel for the Bennett store and apartment building, Buffalo, 100 tons. The American Bridge Company has been awarded the contract for the Edwards department store building, Rochester, requiring 1800 tons of steel, and the same company was awarded the contract for the 2200 tons of steel for the 15-story Seneca telephone building. The 200 tons of steel for the Elmwood avenue telephone substation were awarded to the Buffalo Structural Steel Company. The Lackawanna Bridge Company, Buffalo, has taken a 400-ton bridge contract for the Monon Railroad Company and contract for steel work for a power house at Ft. Worth, Texas, requiring 100 tons of steel.

The German Iron Market

Looks Much Like a Boom

BERLIN, November 17, 1911.

The favorable tendency of the iron trade remains undiminished. On the Dusseldorf Exchange a week ago there was an almost general advance in prices. Most of these merely took account of the recent advances made by trade combinations, as already reported in this correspondence. Steel bars, however, which are not controlled by an organization, were quoted at 104 to 107 marks, as compared with 103 to 106 for the previous week.

The activity at furnaces and mills has rather increased within a week, and the general aspect of the trade is that of a great boom period. The average of orders at steel plants runs to about April 1. Specifications on contracts are everywhere coming in briskly, but most of the works are demanding six to eight weeks for making shipment. Not a few establishments cannot agree to make prompt delivery, even upon payment of a premium.

The foreign demand for iron and steel continues very good and contributes materially to the activity of the trade. Even pig iron is being taken for export in larger amounts than usual. It is believed that the firm tendency of prices has not yet exhausted itself, and that further advances will occur.

An increase in the demand for ore is reported from the Siegerland region. That district has just taken contracts for 150,000 to 200,000 tons of brown iron ore yearly, for shipment to the Silesian district, subject to a reduction of railroad freights, now nearly 12 marks a ton, by one-third by the railroad authorities. This is a new departure, Siegerland ores never having been shipped before to Silesia. Ore prices continue firm for all classes.

Cast Iron Pipe Trade Better Than Ever Before

Business in pig iron is very active. Specifications have increased. Many of the big mixed works, which generally produce all the iron they need, are now buying extra amounts in the market. Manufacturers of cast iron pipe are taking unusually large quantities. It is said that they are doing a better business than ever before. The reason for this is found in the fact that many water works are being enlarged, or new ones put in, owing to the effects of the great drouth of the past summer.

The great specialities of the Steel Works Union—semi-manufactured material, rails and structural shapes—continue in much the same condition as previously reported. In bars the situation has further improved for basic steel. Dealers, having at last become convinced that there is to be no relaxation of prices, have latterly been buying heavily. The big mixed establishments have sold out their capacity in bars to the end of March, and are refusing further orders at existing prices. The foreign market continues to take large amounts at about 100 marks per ton f.o.b. Antwerp. The trade combination controlling bar iron will soon begin taking orders for the first quarter of 1912; an advance of about 2.50 marks is looked for. The export demand for bands and hoops is good, and prices, which are now unsatisfactory, are expected to advance soon. The previous activity in plates of all thicknesses continues unabated.

The news from the Belgian market this week is good, but, after the steady upward movement of prices during the past month or two, a quieter pace seems to prevail now. No further price advances have been reported from there.

New York

NEW YORK, November 29, 1911.

Pig Iron.—The volume of business has increased in the past week but prices have not improved; in fact they are slightly lower. The furnaces represented by local offices, particularly those in the Buffalo district, have closed with a good many buyers, the deliveries being almost entirely for the first quarter and the first half of 1912. The Buffalo furnaces have apparently done a good deal more business in Western New York territory than in the Manhattan district or in New England. They have also placed quite a little iron in Canada and on this business the basis was somewhat below $13 at furnace for No. 2 X, as low as $12.75 being reported. Contrary to what has been true on other buying movements in Canada, the Canadian furnaces in this case assumed the aggressive. The business reported in New York State consists of basic, foundry and malleable grades, basic selling at $13 to $13.25 Buffalo. A large electric company is still in the market for a total of 6000 tons for its New England and Eastern New York works, its recent purchases amounting to about 2000 tons. A malleable foundry in New England has inquired for 1000 tons, and a large heater interest in New Jersey for 1800 tons for the first quarter of 1912, with the possibility of taking 1800 tons additional for the second quarter. The weekly reports of buying by Eastern pipe foundries keep up, with perhaps more basis of fact this week than usual, contracts having been closed here by the leading pipe interest for some of its Western and Southern plants. The total is put at upward of 30,000 tons. More selling of Southern iron at $9.75 Birmingham for No. 2 is reported, and while it is stated that the lower grades are relatively firmer, this would seem to be disputed by a sale of No. 4 at $9 Birmingham. Reports from New Jersey and Pennsylvania territory indicate sharper competition in the past week and Pennsylvania furnaces west of the Alleghenies have been closely competing with Buffalo producers for business in New England. Quotations are as follows for northern iron at tidewater: No. 1 foundry, $15 to $15.25; No. 2 X, $14.75 to $15; No. 2 plain, $14.50 to $14.75. For southern iron we quote $15 to $15.25 for No. 1 foundry and $14.50 to $14.75 for No. 2 foundry.

Finished Iron and Steel.—There is an increased volume in business but even this and other favorable conditions have not served to stiffen prices. Architects are reported to have more projects under consideration than probably has ever been the case, but few of these promise early settlement. From a reliable source it was learned that not a few of these projects are of the investment sort and not of the speculative variety,—in short, they are the kind likely to prove attractive. The week has seen a large amount of structural work settled, as the subjoined list will indicate, and as regards the price situation, it is interesting to add that a considerable number of sellers are asserting that they will not attempt to meet the low prices obtaining in other centers, preferring instead to let the business go elsewhere. That the situation has not strengthened in all respects is shown, for example, by the action of two different sellers' representatives calling within a few hours of the same day on a large buyer, urging him to make offers for open-hearth billets although the likelihood of his needing them was problematical. The plate business has shown no betterment over last week and Eastern mills are thought to be operating at about 50 per cent. capacity. Steel bars have been contracted for in this market at 1.10c., Pittsburgh basis, for jobbing contracts for the first quarter and at the same price for manufacturers' requirements up to July 1, although the volume of business has not been very large. Of structural work pending, it is understood that the 2500-ton Graphic Arts building on West Twenty-fifth street is being refigured; the 50,000 to 60,000 tons required to complete the New York Connecting Railroad will probably not be settled for months; no decision has been made at this writing on the 3000-ton Eagle Silk building; it is expected that bids will be asked soon for a 1300-ton highway bridge at Lewistown, Pa.; about 3500 tons additional steel for the New York Central terminal work are wanted, and it will probably not be long before bids will be advertised for the approach reconstruction at both ends of the Brooklyn Bridge. Among recent awards the American Bridge has received a large tonnage in the Eastern section of the country, including 4000 tons for the Bureau of Engraving and Printing, Washington, D. C.; 2200 tons for the Seneca telephone building, Buffalo; 8150 tons for section 15 of the New York subway, and 2000 tons for the Pennsylvania Railroad bridge at Williamsport, Pa., credited a few weeks ago to another company. Other awards are as follows: Hyde Building, Twenty-fifth street and Madison avenue, 4700 tons, to Levering & Garrigues Company; Flanders Hotel addition, 700 tons, to Hedden Iron Construction Company; bridge at Pittsburgh for the Pennsylvania Railroad, 300 tons, understood to have been taken by the McClintic-Marshall Construction Company, which has a 100-ton bridge for the Boston & Maine; Y. M. C. A. Building, Boston, 1100 tons, to the New England Structural Company; bridge, Baltimore & Ohio, Pittsburgh division, 400 tons, to Fort Pitt Bridge Company; Castle Square Building, Boston, 200 tons, G. W. & F. Smith Iron Works, and an apartment house, Backer Construction Company, Fifty-fifth street, New York, to Hay Foundry & Iron Works; some 2000 tons in bridges for the Chesapeake & Ohio have been placed, and 200 tons for the Pennsylvania Railroad at Jersey City. The Hedden Construction Company is general contractor for the Jersey City post office. The Boston & Maine will take bids December 4 for a 150-ton bridge at Lynn, Mass., and the New York, New Haven & Hartford has inquiries out for a 500-ton bascule bridge at Buzzard's Bay. The quotations, which recognize the Pittsburgh market, with the stipulation that little or no business at the low levels seems to be taken in this territory, are: Steel bars, 1.21c. to 1.31c.; plates and plain structural material, 1.26c. to 1.36c.; bar iron, 1.25c. to 1.30c., all New York. Plain material and plates from store, New York, 1.60c. to 1.70c.

Cast Iron Pipe.—The Consolidated Gas Company, New York, has purchased the 15,584 tons referred to last week for spring delivery, all, or at least the greater part, having been bought from the leading interest. The other large inquiries are understood to be still pending. Numerous other important buyers are in the market for delivery next spring. One of the largest inquiries now out comes from Portland, Oregon, for 12,000 tons of water pipe, which is to be closed December 12. Carload lots of 6 in. are quoted at $22 to $23 per net ton, tidewater.

Old Material.—Dealers are encouraged by the better demand in some branches but buying is by no means general. Old car wheels and cast scrap are called for in somewhat larger quantities, due undoubtedly to the orders for cars recently placed, which will cause foundry operations to be somewhat augmented. Heavy melting steel scrap is quiet as dealers and consumers are somewhat apart in their views regarding prices. Dealers' prices, per gross ton, New York and vicinity, are as follows:

Old girder and T rails for melting	$9.25 to $9.75
Heavy melting steel scrap	9.25 to 9.75
Relaying rails	20.00 to 21.00
Rerolling rails (nominal)	11.25 to 11.75
Iron car axles	19.00 to 19.50
Old steel car axles	15.00 to 15.50
No. 1 railroad wrought	11.75 to 12.25
Wrought iron track scrap	10.50 to 11.00
No. 1 yard wrought, long	10.25 to 10.75
No. 1 yard wrought, short	9.25 to 9.75
Light iron	3.75 to 4.25
Cast borings, clean	5.75 to 6.25
Mixed borings and turnings	5.00 to 5.50
Wrought turnings	6.25 to 6.75
Wrought pipe	9.00 to 9.50
Old car wheels	10.50 to 11.00
No. 1 heavy cast, broken up	10.50 to 11.00
Stove plate	8.25 to 8.75
Locomotive grate bars	8.25 to 8.75
Malleable cast	10.00 to 10.50

Ferroalloys.—The market continues firm with a tendency in ferrosilicon to advance. The price of 80 per cent. ferromanganese is held at $38.50, Baltimore, forward delivery; a Pittsburgh company is in the market for 350 tons. Ferrosilicon is quoted at $70, Pittsburgh, and it is asserted that sales have been made at that price. Consumers appear to be in need of ferroalloys as they are urging delivery on their contracts and recent buying.

Metal Market

NEW YORK, November 29, 1911.

The Week's Prices

Cents Per Pound for Early Delivery.

	Copper, New York.			Lead		Spelter	
Nov.	Lake.	Electrolytic.	Tin, New York.	New York.	St. Louis.	New York.	St. Louis.
23	13.00	12.87½	43.95	4.35	4.25	6.80	6.65
24	13.12½	13.00	44.60	4.35	4.25	6.80	6.65
25	13.25	13.00	45.00	4.35	4.25	6.80	6.65
27	13.25	13.12½	45.50	4.45	4.35	6.90	6.75
28	13.25	13.12½	45.25	4.45	4.35	6.90	6.75
29	13.25	13.12½	45.25	4.45	4.35	6.95	6.80

Prices advanced during the week on all metals except antimony. The tin market was very active Thursday, Friday and Saturday. Spelter continues scarce and tightly held and tin is not plentiful.

Copper.—The copper market remains fairly firm. Electrolytic is quoted in New York about 13.12½c. to 13.25c. Domestic demands seem to be about satisfied for the present. Some producers are well sold up and are declining to sell for future delivery at any price. One large seller, practically the only one which can make early delivery, quotes electrolytic at 13.12½c. f.o.b. New York, cash. Other sellers ask 13.25c., cash 30 days, and a few small lots have been snapped up at that price. Lake copper is quoted at 13.25c. London quotes spot copper at £58 18s. 9d., futures at £59 12s. 6d. The exports of copper to date total 25,250 tons.

Pig Tin.—As had been anticipated, the price of pig tin has been advanced, 45.25c. now being quoted in New York. A very active market started Thursday and continued Friday and Saturday. A large business was done for December and January delivery, footing probably 1500 tons in the three days. The activity is believed to be due to conditions in London where the syndicate is in firm control. Shipments from the Straits are the smallest of many months. London quotes spot tin £201, futures £191 10s., and buyers must go to London for their supply. Stocks here are low. The delivery into consumption to date has been 3100 tons, leaving 898 tons on hand. The arrivals of tin so far this month are 2229 tons, with the amount afloat estimated at 1305 tons.

Tin Plates.—The demands of the canners for tin plates have developed with the season and the trade has increased accordingly. Other consumers, such as the tinware manufacturers, have less business at this season, public attention being turned as a rule to holiday goods, but the tinware manufacturers are expected to come in the market strong after the first of the new year. The price is unchanged at $3.64 for 100 lb. coke plates in New York. The price for tin plates laid down at Swansea, Wales, is also unchanged at 13s. 6d.

Lead.—The price of lead was advanced 10c. per 100 lb. by the American Smelting & Refining Company on November 27, making the New York price 4.45c. and the St. Louis price 4.35c. The outside price is 4.50c. The market is firm and active.

Spelter.—This metal continues to advance. The price in New York is 6.95c. and in St. Louis 6.80c. Manufacturers of galvanized sheets and other galvanized material have felt the high prices keenly and are complaining that the spelter costs are out of all proportion with the prices they obtain for their products. Spelter is so scarce that none can be had from the West until the first half of January. Retail lots are selling at 7.25c. per lb.

Antimony.—Antimony has not shared the general advance in price. There is no special activity in the market. Cookson's is quoted at 7.75c. to 7.87½c.; Hallett's, 7.60c. to 7.70c.; Hungarian and Chinese grades, 6.90c.

Old Metals—The demand is good and dealers' selling prices have been advanced as follows:

	Cents per lb.
Copper, heavy and crucible	12.25 to 12.75
Copper, heavy and wire	12.00 to 12.50
Copper, light and bottoms	11.00 to 11.25
Brass, heavy	8.75 to 9.00
Brass, light	6.75 to 7.00
Heavy machine composition	11.00 to 11.25
Clean brass turnings	8.25 to 8.50
Composition turnings	9.00 to 9.50
Lead, heavy	4.20
Lead, tea	3.95
Zinc, scrap	5.25

Chicago

NOVEMBER 27.—In sympathy with the strong Eastern market, the local price of both casting and Lake copper has advanced. Tin, spelter and zinc are also quoted higher, though in some quarters these advances are considered artificial. Local buying has been fairly active. We have revised our prices and quote at Chicago as follows: Casting copper, 13.25c.; Lake, 13.50c., in carloads, for prompt shipment; small lots, ¼c. to ⅜c. higher; pig tin, carloads, 46.50c.; small lots, 49.50c.; lead, desilverized, 4.30c. to 4.35c., for 50-ton lots; corroding, 4.55c. to 4.60c. for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 6.80c.; Cookson's antimony, 8.75c., and other grades, 7.75c. to 8.25c., in small lots; sheet zinc is $8.50, f.o.b. La Salle or Peru, Ill., less 8 per cent. discount, in carloads of 600-lb. casks. On old metals we quote buying prices for less than carload lots: Copper wire, crucible shapes, 10.75c.; copper bottoms, 9.62½c.; copper clips, 10.50c.; red brass, 9.75c.; yellow brass, 7.50c.; lead pipe, 3.85c.; zinc, 4.50c.; pewter, No. 1, 26c.; tinfoil, 32c.; block tin pipe, 36c.

St. Louis

NOVEMBER 27.—The metal market here is still on the upward march and the figures to-day show decided gains over last week. Lead is quoted sharply higher at 4.37½c. and strong at that figure. Spelter, which showed a slight recession late last week, took a turn about to-day and rose to 6.85c., at which it was firmly held. Tin is strong at 45.35c. Copper took a spurt, Lake being quoted at 13.72½c., and electrolytic at 13.62½c. Cookson's antimony is off to 8.22½c. The general demand is quiet, largely on account of the advances which are making buyers cautious. In the Joplin ore market the highest price of the year for zinc blende was reached, offerings going to $50.59, contract figures, on a basis of 60 per cent. metallic zinc, this figure being reached on the spelter average at East St. Louis. In the open market blende went to $47, basis of 60 per cent. metallic zinc, while better grades reached $48. The highest price in the open market was $50, while choice lots selling on contract brought $53. Calamine continued in good demand, bringing $24 to $28 per ton, assay basis of 40 per cent. metallic zinc, while the choice lots reached $35. Lead ore brought $56 to $58 per ton. On old metals we quote: Light brass, 4c.; heavy brass and light copper, 8c.; heavy copper and copper wire, 9c.; zinc, 3c.; lead, 3.25c.; pewter, 20c.; tin foil, 29c.; tea lead, 3c.

Iron and Industrial Stocks

NEW YORK, November 29, 1911.

The stock market has shown well sustained strength in iron and industrial stocks, due largely to the greater volume of business in iron and steel products. Conspicuous in strength has been Can preferred, which sold at the highest price ever realized on this stock. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chalm., com...	3⅛- 3¼	Pressed Steel, com..	33½- 34⅛
Allis-Chalm., pref.....	13	Pressed Steel, pref.....	100
Beth. Steel, com....	30 - 30¾	Railway Spring, com.	32 - 32⅛
Beth. Steel, pref....	57 - 60	Railway Spring, pref.	101⅞-102⅛
Can, com.....	11¼- 11⅞	Republic, com.....	23 - 23⅞
Can, pref.....	90 - 91¾	Republic, pref.....	82½- 84⅛
Car & Fdry., com..	54¼- 56¼	Pipe, com.....	14¼- 14½
Car & Fdry, pref...	116 -116¼	Pipe, pref.....	44½- 47
Steel Foundries.....	34 - 34⅝	U. S. Steel, com...	63⅜- 65⅛
Colorado Fuel	27 - 29¼	U. S. Steel, pref...	109 -109¾
General Electric....	154¼-156	Westg. Elec.....	65¼- 66
Gr. N. Ore Cert....	42¾- 43½	Va. I. C. & C.....	60 - 62
Int. Harv., com...	104½- 109	Am. Ship, com.....	48
Int. Harv., pref.....	120½	Chic. Pneu. Tool...	45¼- 45½
Int. Pump, com....	33½- 34⅝	Cambria Steel.....	43⅝- 44¼
Int. Pump, pref....	82¾- 83⅞	Lake Sup. Corp.....	26¼- 27⅛
Lackawanna Steel...	31 - 32	Warwick	10½
Locomotive, com....	36½- 37½	Crucible Steel, com.	11⅛- 11¾
Locomotive, pref...	102½-104	Crucible Steel, pref.	80 - 81⅞
Nat. En. & St., pref.	96 - 96½		

Dividends Declared

The Republic Iron & Steel Company, regular quarterly, 1¾ per cent. on the preferred stock, payable January 2.

The Du Pont International Powder Company, regular quarterly, 1¾ per cent. and extra 1¾ per cent. on the preferred stock, payable January 2.

The Safety Car Heating & Lighting Company, regular quarterly, 2 per cent. and extra 1 per cent., payable December 22.

The Railway Steel Spring Company, regular quarterly, 1¾ per cent. on the preferred stock, payable December 20.

The Wheeling Steel & Iron Company, quarterly, 2 per cent., payable December 1.

Labor Notes

It is stated that since the defeat of the strike of the International Association of Machinists for an eight-hour day many union machinists, particularly in the East, have surrendered their cards. The calling of the strike is regarded by many of these men as a political move, in the interest of the old officers, who were defeated at the last election of the union. In a number of cases men no longer young went out on strike and are now unable to get other positions.

Several hundred boilermakers returned to work last week at the Schenectady, N. Y., shops of the American Locomotive Works, where a strike in this department had been on for about a month.

Personal

W. H. Meyst has been placed in charge of the office just opened by the DeForest Sheet & Tinplate Company, Niles, Ohio, at 836 First National Bank Building, Chicago. The office will handle the sale of steel sheets and black and galvanized roofing. Mr. Meyst was formerly associated with Theodore Geissman & Co. E. D. Thompson, secretary of Theodore Geissman & Co., will become associated with the new DeForest Chicago office January 1.

Alfred Crook, former superintendent of the Philadelphia Roll & Machine Company, Philadelphia, Pa., has been appointed general manager, to succeed August Marx, deceased. The announcement is officially made by William Selfridge, president. Mr. Crook has been actively connected with rolling mills and their machinery and equipment since the age of 14, when he started work in the mills of the old Brown-Bonnell Iron Company, Youngstown, Ohio. He then learned the molding trade and for several years was engaged in the foundry business in Youngstown, Ohio, under the firm name of Crook & Griffith, but after three years disposed of his interest to become superintendent of the Youngstown Iron Sheet & Tube Company. After four years' service he resigned to accept the position of superintendent of the Philadelphia Roll & Machine Company.

Franklin Alter, the venerable president of the American Tool Works Company, Cincinnati, Ohio, fell on a slippery pavement November 22, dislocating his right shoulder and suffering other injuries. On account of his advanced age it was thought that he was seriously hurt, but later advices are more reassuring.

W. B. Franklin, of the Philadelphia office of the United States Cast Iron Pipe & Foundry Company, has been appointed to succeed A. J. Goodhue as Western sales manager, in charge of the Chicago office. Mr. Goodhue has been absent from the office for several months because of illness and his condition continues discouraging.

In the changes in the officials of the Trenton Iron Company, Trenton, N. J., incident to the resignation of President H. G. Stoddard, it is announced that J. W. Smith, formerly superintendent of plant, has been made general manager and W. E. Cone, New York sales manager, has been made general sales agent.

F. H. N. Gerwig, assistant superintendent of the Carrie furnaces of the Carnegie Steel Company, has resigned to become superintendent of blast furnaces of the Pittsburgh Steel Company, Monessen, Pa., and will look after the erection of the two or three blast furnaces to be erected there, which are expected to be completed and in operation late in 1912 or early in 1913. His resignation becomes effective January 1, and his successor has not been appointed.

W. R. Balsinger, manager of sales in the armor plate department of the Carnegie Steel Company, Pittsburgh, has just returned from Europe, where he secured the order from the Italian Government for 5000 tons of armor plate and for 1650 tons of Carnegie specially treated deck plates.

Obituary

WILLIAM E. HARRIS, Niles, Ohio, died November 17, aged 76 years. He was born in England, became an employee of a rolling mill at a very early age, and acquired a high reputation as a sheet roller. He was induced to come to this country shortly after he was 21 years old by Phillips & Jordan, Covington, Ky. His subsequent American experience in rolling mills was at Newport, Ky.; Cincinnati, Ohio; Chicago, Ill., and St. Louis, Mo. He was the general superintendent for the St. Louis Stamping Company (Neidringhaus Brothers) for 13 years and himself rolled the first black plates for tinning made by that pioneer establishment in manufacturing tin plate under the McKinley tariff act. In 1892 he built the tin plate mills for the Falcon Iron & Tin Plate Company at Niles. The Falcon Company, in which he had a large interest, was merged in the American Tin Plate Company in 1899, when Mr. Harris retired. He was the inventor of numerous devices in connection with the manufacture of tin plate. He leaves a widow, two daughters and a son.

AUGUSTUS P. THOMPSON, one of the pioneer iron manufacturers of Buffalo, N. Y., died in that city November 24, aged 87 years. In 1860 Mr. Thompson, associated with Edward S. Warren and De Garmo Jones, built the second anthracite blast furnace erected in Buffalo, the first having been built by Palmer & Co. The two concerns were soon consolidated as the Buffalo Union Iron Works and built one of the largest rolling mills in the country at that time. Mr. Thompson remained with the company until 1866, when he bought an interest in the white lead manufactory of S. G. Cornell & Son, afterward incorporated as the Cornell Lead Works, of which he became president. Since that company's merger with the National Lead Company Mr. Thompson had been manager of the Buffalo branch.

ROBERT C. MORRISON, founder and president of the Joliet Bridge & Iron Company, Joliet, Ill., died suddenly November 24, during the convalescent period following typhoid fever, aged 55 years. He was born in Scotland and located in Joliet in 1880. He was active in the municipal and religious life of his city.

HARRY F. FORBES, president of the Rockford Malleable Iron Works, Rockford, Ill., died November 20. He had not been in robust health. He attended a football game at Ann Arbor, November 18, and died suddenly on reaching home. He was also president of the Peoples Bank of Rockford.

To Concentrate Moose Mountain Iron Ores

A contract has recently been made between the American Grondal Company, 45 Wall street, New York, and Moose Mountain, Ltd., licensing the latter to operate a plant for the wet magnetic concentration and briquetting of magnetite ores under the Grondal patents in connection with its mining operations in Hutton township, district of Nipissing, Ontario. The Moose Mountain company for some time has conducted both in Europe and the United States an investigation of the treatment of ores of the type it is proposed to use. This investigation has been under the direction of C. E. Herrmann, assistant to the president of the company. He has consulted freely with Joseph Sellwood, Duluth, vice-president and general manager of the Moose Mountain company, and also with Leonard B. Miller, of Oglebay, Norton & Co., Cleveland. All sampling and analytical work in connection with experimental tests have been in charge of F. A. Emmerton, Cleveland.

A plant with a nominal capacity of about 375 tons a day of finished material is now under construction at Sellwood, Ontario, and is expected to be in operation in the season of 1912. Construction is in charge of the company's superintendent, F. A. Jordan. Alex. Laughlin & Co., Pittsburgh, are construction engineers and have retained Hamilton & Hansell, New York, as consulting engineers regarding features of the plant directly affecting the Grondal process. The product from the plant will be in the form of briquettes containing 63 per cent. metallic iron and about 0.02 per cent. phosphorus. The Moose Mountain company has available a vast amount of ore that may be utilized by concentration, and if the new plant proves successful commercially its capacity will be greatly increased.

Railroad Equipment Orders.—Orders for box cars recently placed by the Canadian Pacific include 2500 to be built by the Canadian Car & Foundry Company, 1000 by the Pressed Steel Car Company and 1000 by the American Car & Foundry Company. The Grand Trunk has bought 2000 hopper cars from the Pressed Steel Car Company. The Missouri Pacific has bought from the American Car & Foundry Company 1500 freight cars, two-thirds of them automobile cars, and from the Standard Steel Car Company 500 freight cars. All are to be of 80,000-lb. capacity. These orders make 5400 cars bought by the Missouri Pacific since August. The Atchison, Topeka & Santa Fe is said to be figuring on 8000 cars, but no confirmation has been had. The Harriman Lines are expected to be in the market soon for 12,000 to 40,000 freight cars.

Pittsburgh and Vicinity Industrial Notes

The United Engineering & Foundry Company, Pittsburgh, has received an order from the American Hoist & Derrick Company, St. Paul, Minn., for a 150-ton, high-speed, steam hydraulic forging press. The machine will be delivered from stock, as the company makes this size in half-dozen lots.

C. R. Doyle, secretary of the Borough Council, Ambridge, Pa., will receive bids December 4 for the construction of a municipal water plant. Plans and specifications are on file at the office of the engineer, J. P. Leaf, Rochester, Pa.

The Erie City Iron Works recently contracted through T. H. McGraw, Jr., its district sales agent, Pittsburgh, Pa., with the Ben Franklin Coal Company for a complete power plant, consisting of a 19 x 18, side-crank, high-speed engine, direct connected to a 150-kw General Electric generator, with boilers, heater, foundations and building for complete installation, also an electric locomotive. The machinery will be located at the Ben Franklin Company's new development at Moundsville, W. Va.

The Parkersburg Bridge Company, it is announced, will shortly begin the erection of a steel suspension bridge across the Ohio River between Parkersburg, W. Va., and Belpre, Ohio, involving an expenditure of $450,000. Plans have been prepared by E. K. Morris, Pittsburgh, Pa.

The Manufacturers' Publicity Association, composed of representatives of the manufacturing concerns of Pittsburgh and vicinity, held its annual meeting and election of officers in the Fort Pitt Hotel last week. J. C. McQuiston, Westinghouse publicity manager, was chosen president; Stephen C. Mason, secretary McConway-Torley Company, vice-president; A. W. Kerin, advertising manager Mesta Machine Company, was re-elected treasurer; C. W. Brooke was chosen secretary for the third term. It was decided to co-operate with the Industrial Development Commission in advertising Pittsburgh and to lend the assistance of the association to C. B. Nash, instructor in charge of the advertising course of the Young Men's Christian Association.

The directors of the Seneca Chain Company, with works at Kent, Mansfield and Zanesville, Ohio, have voted to reduce the common stock from $294,300 to $147,150.

Work has started on the erection of 22 additional stories to the First National Bank Building, Wood street and Fifth avenue, Pittsburgh, by the Thompson-Starrett Company, the structural steel being fabricated and furnished by the Riter-Conley Mfg. Company.

The American Sheet & Tin Plate Company, Frick Building, Pittsburgh, has issued a leather-bound, well-printed booklet, giving information which the trade will highly appreciate regarding ratios of odd sizes of tin plate and also presenting a complete list of the district sales managers in its various branch offices throughout the country.

The Russel Machine Company, Twenty-eighth street and Allegheny Valley Railway, Pittsburgh, dealer in second-hand machinery, has awarded a contract to the Fort Pitt Bridge Works, Pittsburgh, for a steel building, 50 x 120 ft., to be iron clad, the erection of which will commence next month. When finished it will be equipped for the repairing of used machinery. The company requires a 10-ton crane for the new building and will likely purchase a hand-operated type.

United Engineering & Foundry Company, Pittsburgh, Pa., has shipped to the American Bridge Company, Ambridge, Pa., one 150-ton, high-speed hydraulic forging press, being the second press of this type purchased by the same buyer within six months.

R. W. Oswald, Jenkins Building, Pittsburgh, has been appointed district representative for the Nagle-Corliss Engine Works, Erie, Pa., for its line of Corliss and four valve engines, ranging from 25 to 1500 hp.

Joseph T. Ryerson & Son, Chicago, are now issuing a weekly stock list, the first list being under date of November 13. On one side are printed the stocks of shapes, plates, bars and rivets and on the reverse side the various specialties carried. This list has the advantage of being printed on a heavy, stiff paper of sufficient weight to make it durable and so that it may be kept in a conspicuous place conveniently.

An Interesting Engine Order

Mackintosh, Hemphill & Co., Pittsburgh, have received an order from the Algoma Steel Company, Ltd., Sault Ste. Marie, Canada, for a 36 x 42-in. three-cylinder, direct-connected reversing engine, for driving the new billet mill. This engine will be designed with the steam and exhaust piping arranged so that it can be operated either as a three-cylinder high pressure, or, by using one cylinder for high pressure steam and the two others low pressure, as a compound.

This particular type of engine was selected by W. C. Mitchell, general manager of the Algoma Company, as being best fitted to meet its special requirements. The mill is to be used chiefly for rolling small billets from blooms and therefore must necessarily be run at a high speed. The company wishes to avoid a shut-down in operations during the period of taking out the old 30-in. blooming mill and the installation of a new 35-in. blooming mill and 55 x 60-in. direct-connected reversing engine, and desires to use the new equipment temporarily for rolling ingots down to rail blooms. In order to get the additional power required for doing this work, all three cylinders of the new engine will be run under high-pressure steam. After the new 35-in. blooming mill is put in operation, it is the intention to run the engine compound on the smaller work.

Mackintosh, Hemphill & Co. having received the above order, a rare opportunity will be offered those interested to see under construction at one time three distinct types of direct-connected reversing blooming mill engines, namely, the engine above referred to; a 55 x 60-in. twin-cylinder, direct-connected reversing engine for the same concern, which is to run in conjunction with a low-pressure turbine of European make, and a 44 and 70 x 60-in. twin, tandem-compound, condensing, direct-connected reversing engine for the Pittsburgh Crucible Steel Company. This is worthy of mention, in that it shows the diversity of requirements to be met in modern rolling mill practice.

Plans of the Otis Steel Company

At the annual meeting of the Otis Steel Company, Ltd., at London, England, November 10, the chairman, T. Frame Thomson, who had just returned from a visit to the steel works of the company at Cleveland, Ohio, said that two proposals were under consideration which would in due time be acted upon by the directors. The first was that of surrendering the company's English domicile and incorporating in the country where its operations are carried on. The second related to the inability of the present works to handle all the business offering. The depressed condition of trade, it was pointed out, offered a favorable opportunity for undertaking extensions. In spite of adverse conditions in the American steel trade in the past year it was stated that profits had been practically normal. The average trading profit of the company's six preceding years was £115,000 and it was £117,000 for the year ended June 30.

Kerr Turbine Sales.—The Kerr Turbine Company, Wellsville, N. Y., reports that over 700 of its machines, aggregating more than 50,000 hp., are in active service, and that more unfilled orders are now booked than at any previous time in the history of the company. Although the plant has been materially enlarged, a night shift has been necessary for the past two and a half years. Among important recent orders are the following: One 350-kw. turbo-alternator for the Brooklyn refinery of the Standard Oil Company; two 2800 gal. per min. turbo pump units for Tidewater Oil Company; one 60 b.h.p. turbo-generator with Prony brake attachment for the University of Melbourne, Australia, which takes steam at 200 lb. with 200 deg. superheat, and exhausts to 28 in vacuum; one 215 hp. turbo-blower for People's Gas Light & Coke Company, Chicago, being the tenth set of this size ordered by that company; one fire pump driven by 265 hp. Kerr turbine for the B. M. Osbun Company, Chicago. This last named is stated to be the only turbine-driven fire pump in the city of Chicago.

The American Sheet & Tin Plate Company will start up 8 of the 23 hot tin mills in its Martins Ferry Works, at Martins Ferry, Ohio, on Monday, December 4.

The Weiss Briquetting Process for Ores and Flue Dust

An article by E. Holzhüter on the Weiss briquetting process appears in Stahl und Eisen for September 21. This process is protected by German patent No. 183108. The chief features of interest are the penetration of the briquettes by carbon dioxide under pressure and the use of cold carbon dioxide at the beginning and warm gas at the end of the binding process, in order to produce a firm bond of calcium carbonate.

In carrying out the operation a part of the necessary limestone is added directly to the ore or flue dust. The other part is burnt direct in a special shaft retort furnace. The concentrated carbon dioxide from these furnaces is caught in a holder, while the burnt lime is changed into powdery hydrate of lime and added to the material to be briquetted in the proportion of 5 to 6 per cent. The materials are thoroughly and intimately mixed. The mixture is then formed into suitable shape in a press under comparatively small pressure, about 300 atmospheres. The best shape is a cylinder of about 7¾ in. diameter and 4 in. high. The briquettes are placed by hand in small cars hanging from a rail, each holding 1 1-3 tons. The cars are of such a shape that they can be tilted from both sides. They are open on the top, and by tilting the round briquettes roll out. When a car is filled it is transferred to the hardening chamber that will contain 20 cars. When this chamber is filled and closed, carbon dioxide is introduced at a pressure of 20 atmospheres, so that it penetrates immediately to the center of the briquettes. From these chambers the cars enter other chambers through which pass the warm waste gases from the retort furnaces, and the remaining gas from the hardening boilers. In this way the briquettes are treated under pressure first with cold and then warmer carbon dioxide. In from three to four hours briquettes are produced that are solid and hard to the center, and that notwithstanding this also possess great porosity. They can be handled immediately and used directly in the blast furnace.

The chemical changes that take place in the operation are simple, and by means of them the limestone necessary for any raw material can be readily calculated. An excess of 10 per cent. should be allowed for the moisture in the stone, and the unavoidable loss of carbon dioxide. The proper percentage of calcium hydrate to add to the ore or flue dust of course varies and can readily be found by experiment.

Next comes a description in detail of a plant in course of construction at a large blast furnace works. Its capacity is 600 tons per 24 hours, of ore, flue dust, etc. Drawings are given of the plant and illustrations of the special car.

In the case of ore with a large amount of moisture the lime is added in the form of milk of lime. The total process is carried out in about five hours, and the material is only once touched by hand; that is when it is loaded in the cars before entering the hardening chambers. For the plant described 44 men and 2 foremen are necessary. The author calculates that in Germany the cost for treatment of each of ore, flue dust, etc., will be 2 marks.

The only material that cannot be successfully treated by this process is ore containing a large percentage of clay. For such ores the best thing to do is to press them into suitable shape and either dry or burn them in regular brickmaking furnaces. A table of results obtained by W. Venator is also given showing the good porosity of briquettes made from various kinds of flue dust (including American), crushed magnetite and burnt pyrites. G. B. W.

A recent French report on the ore deposits of Normandy, in which several German companies are heavily interested, estimates that there are 700,000,000 tons of ore in the district. Production there had increased very slowly for the last quarter of the nineteenth century, but it has been growing more rapidly since 1900. For that year 570,000 tons was produced, but this year it is expected that about 900,000 tons will be reached. Several more mines have recently passed into German hands, and it would appear that German capital is taking a much livelier interest in the district than French.

The World's Production of Coal

The total coal production of the world in 1910 was approximately 1,300,000,000 tons of 2000 lb., of which the United States contributed 39.2 per cent. This country has far outstripped all others, and in 1910, according to the United States Geological Survey, it exceeded Great Britain, which ranks second, by over 200,000,000 tons. Great Britain's production in 1910 was less than 60 per cent. of that of the United States, and Germany's was less than half. The increase in both of these countries in 1910 over 1909 was comparatively small, whereas the increase in the United States was nearly equal to the entire production of France and was more than the total production of any foreign country except Great Britain, Germany, Austria-Hungary and France.

The United States has held first place among the coal-producing countries of the world since 1899, when it surpassed Great Britain. In the eleven years since 1899 the annual output of the United States has nearly doubled, from 253,741,192 tons to 501,596,378 tons, whereas that of Great Britain has increased only 20 per cent., from 246,506,155 tons to 296,007,699 tons.

The following table shows the coal production of the principal countries of the world in 1910, except those for which only the 1909 figures are available:

The World's Production of Coal, in Tons of 2000 Lb.

United States (1910)	501,596,378
Great Britain (1910)	296,007,699
Germany (1910)	245,043,120
Austria-Hungary (1909)	54,573,788
France (1910)	42,516,232
Belgium (1910)	26,374,986
Russia and Finland (1910)	24,967,095
Japan (1909)	16,505,418
Canada (1910)	12,796,512
China (1909)	13,227,600
India (1909)	13,294,528
New South Wales (1909)	7,862,264
Spain (1909)	4,546,713
Transvaal (1910)	4,446,477
Natal (1910)	2,572,012
New Zealand (1909)	2,140,597
Mexico (1909)	1,432,990
Holland (1909)	1,233,515
Queensland and Victoria	1,119,708
Italy (1909)	611,857
Sweden (1909)	272,056
Cape Colony (1909)	103,519
Tasmania (1909)	93,845
Other countries	5,236,903
Total	1,278,577,812

Engineers Visit Cambria Works

A large number of members of the Engineers' Society of Western Pennsylvania made a visit of inspection to the plant of the Cambria Steel Company, Johnstown, Pa., Saturday, November 25, on invitation of Charles S. Price, president of the company. Departments of the extensive plant which the visitors noted with much interest were the new rod and wire mills, and the 18-in. continuous mill (described in *The Iron Age* of May 5, 1910) which brings blooms 8 in. square down to 1¾ in. billets or tin bars by four 22-in. stands and eight 18-in. stands of rolls. The two-high blooming mill at the Franklin plant is of Mackintosh, Hemphill & Co. type and rolls down to as small as 4 in. square. There are also in this plant a 34-in. slabbing mill and 134-in. plate mill which have been described in these columns. The trip through the Gautier department, where a large portion of the product is agricultural implement parts, developed a good many features of mechanical interest. The safety devices in various parts of the plant received attention, particularly those in the wire rod and wire mills.

The Cambria Steel Company employs 18,000 men. The site of its works extends 6½ miles along the Conemaugh River.

A Diesel engine of six cylinders, to develop 12,000 hp., has been designed, it is stated, for use on a German battleship. Each set of three cylinders, it is understood, is self-contained and forms a complete machine capable of working independently. From brief tests it is indicated that each cylinder may develop as much as 2500 hp. or more. The engine is being built at Nuremberg, Germany.

A 500 hp. electric locomotive using a Diesel engine for driving the dynamo has been designed by the North British Locomotive Company, according to the Engineer of London.

Future Development of the Middle West*

Indications from Iron Trade Records—The Problem of a Shortage of Common Labor —An Optimistic Forecast

BY H. P. BOPE†

For the purposes of this address we will take the Middle West as that part of the United States lying between the Pennsylvania line and the western border of Nebraska, including the Mississippi and Gulf basins. It is that section of the country which has shown the greatest increase in population and in the value of manufactures and of farm products in the past decade. While the interests of the eastern section of this territory are more or less closely connected with the East, there is no intention of making this a sectional matter. We must draw the line somewhere, and this seems to be the section of the country which would most naturally be called the "Middle West."

Growth in Population, Crops and Manufactures

The population of this division in 1910 was 47,000,000 in round figures, or about one-half of the total population of the country. The increase as compared with the census of 1900 was 23½ per cent., the range being from 0.3 per cent. decrease in Iowa to 110 per cent. increase in Oklahoma. In 1910 the value of the manufactured products of this section was $8,272,000,000, an increase of 49 per cent. in the decade.

These are startling figures, and while it is impossible to make an analysis for a particular product it is fair to say that the average applied to all manufacturing interests in that period. In the 10 years from 1900 to 1910 there were one business depression and one extreme financial panic; yet neither of these seems to have greatly retarded, or if so, but temporarily, the extraordinary increase in the wealth represented and the general prosperity of the section. The value of the crops harvested in 1910 was $2,354,000,000, which is in fair proportion to the value of the manufactures in the same district.

There has been a steady increase in population, in the value of farm products, and in the value of manufactures during the past 10 years. The growth in population due to natural causes and to immigration—which latter, however, is likely to fall off in the future—will continue to be sufficient to require an important advance in both the other items. It is unnecessary to go further back than the last decade, the figures for which are sufficient to show a gain proportionate to that in any other period in the history of the country, and one from which we may safely draw the conclusion that in the three elements of population, farm products and manufactures there will be no recession even if the figures do not reach the size of those representing the growth of the past 10 years. * * *

The Iron Industry as a Criterion

Any discussion of the future naturally involves one's risking some reputation as a prophet. It will be safer, therefore, for me to take the interest with which I am directly connected as a basis for such prediction, on the theory that, steel and its allies being king, if steel be prosperous and its future assured other industrial interests will share in the general prosperity. Steel has been a steadily advancing article in not only the mere tonnage produced but in the necessities which it has created and which it alone can serve. A few figures, therefore, showing the great increase in the consumption of steel, we will say between 1902 and 1910, give us a foundation on which to build a prediction for the future. I will use only round figures:

The total shipment of iron ore from the Lake Region in 1902 was 27,600,000 tons; in 1910 it was 43,400,000 tons.

The total production of iron ore in 1902 was 35,500,000 tons; in 1910 it was 56,900,000 tons.

In pig iron the total production in 1902 was 17,800,000 tons; in 1910 it was 27,300,000 tons.

I shall not attempt to segregate the different items of steel products, such as rails, structural material, plates, etc., but shall use the totals; The total production of all kinds of steel products in 1902 was 14,000,000 tons; in 1910 it was 21,600,000 tons.

Now what are we to gather from these figures? The tonnage produced was all consumed. The trade conditions were such that no stocks have been accumulated during the past year, and there is still an overproduction which partly accounts for the trade depression we have witnessed during the present year. But the growth of the country is such that we may reasonably expect that the demand will soon largely exceed the supply in spite of this overproduction, and another period of congestion will ensue. We may base this prediction on the known rule that the consumption of steel doubles itself in about every 10 years. This results, first, from the application of steel to new uses, and second, from the increasing use of steel, due to the larger demands upon it. By this I mean in railroad service, for instance, where heavier cars, larger loads, longer trains and increased speed have necessitated and are requiring to-day the use of heavier rails, the strengthening of bridges, etc., thereby creating a further use for steel itself. And there are other things which will readily occur to you in this connection. We never get away from the use of steel, from the cradle to the grave. Moreover, by careful and regular attention to the demands of export trade there has been created an outgo from this source which has helped wonderfully to take up our surplus, to create a balance of trade and to establish world trade relations which will grow instead of shrinking.

Other Industries Will Go Forward

Now, while I have taken steel as an illustration, exactly the same things are occurring in other lines of industry. The automobile, for example, has come to stay, and the demands not only for steel but the other things which go into the make-up of even the cheapest class of cars have created and will maintain a demand for products which will serve to steady an industry but little more than an infant, however lusty.

The opening up, by irrigation, of extensive tracts of land in the far west, hitherto unprofitable; the extension of railroads and their powerful ally the traction lines, opening up to settlement places before inaccessible, but now enabling a workman to live with more comfort at not too great a distance from the place of his labor; the conservation of resources which we have been using up to this time with a too prodigal hand, and the value of which we now realize as never before; the larger economies which are being worked out not only in the actual manufacture of articles but in their sale, and in the general conditions of life—all seem to me to point to an era of unexampled prosperity in this, the most favored region not only in our own land but anywhere in the world.

When one industry is largely prosperous its effect is felt upon all others; and if the largest is prosperous, as I believe it will be shortly, there will be enough and to spare not only for kindred but other industries not directly related to steel. Nor do I think you will say that the picture is too bright. We are prone to think the things we want to think, but experience is hard-headed and does not permit anything to be presented which is not based upon its wisdom. If the great American orator was correct, as I think he was, in his familiar statement that he knew of no way to judge of the future but by the past, then by such judgment we may reasonably expect the prediction I have made to be fulfilled.

*From an address delivered before the Chamber of Commerce of Cleveland, Ohio, November 29, 1911.

†Vice-president and general sales agent of the Carnegie Steel Company.

Industrial Warfare Destructive

But we shall not attain to all we want merely by waiting for it to come. There are certain obstacles to be overcome and certain dangers to face which are of tremendous importance and the effect of which cannot be minimized by any appeal to "magnificent resources or trained experience." We may classify them under the three heads of legislative, financial and economic.

No business man to-day in the light of all experience would care to go back as a permanent condition to the days of the small concern and of what was known as "cut-throat" competition. So much has been said on this subject during the past few months that it is undoubtedly uppermost in the minds of a great majority of the people of this country to-day. If nations desire peaceful relations because of the costliness and the folly of war, what shall be said of any one who advocates different conditions as between great corporations, upon the prosperity of which depend the happiness, the prosperity, the very lives of so many of the people of this country? Industrial warfare is just as destructive as national warfare, and farther reaching in its effects. Hague tribunals are mockeries if vengeful warfare is to be waged by large industrial institutions against each other. We have learned by experience that industrial war is costly. We have had a number of remedies proposed in the past few weeks by those who are giving constructive consideration to the subject. Let us have sensible conditions by which fair profits may be shared, with fair dealing between competitors, with conservation of capital, with reasonable returns to labor, with stability to markets—conditions under which the country has reached the largest development it has ever witnessed in any equal period of time.

Secondly are the financial obstacles. The financial system of this Government is a crime in the records of constructive financial statesmanship. The first Secretary of the Treasury was so immeasurably above all his successors that he seems to have cast a shade out of which they were all afraid to emerge. A large part of the system he devised is still in use, showing how effectively he looked into the future. But we are concerned with a larger future than even Hamilton dreamed. We need a system which shall give such stability in finance as a co-operative system, under proper supervision, will give in commerce. Europe has had no financial panic in over 50 years and yet has stood the test of several wars in that period. A condition such as existed here in the fall of 1907 would be impossible there. Let us hope that a measure something along the lines of the Aldrich plan will soon be made a part of our financial system, one which when enacted will well serve to place us on a basis of stability and prevent the conditions of 1907.

Insufficient Supply of "Common Labor"

The third class of obstacles are economic. There are several serious matters which might be mentioned under this head, but I shall mention but one. It is to-day but a little cloud no larger than a man's hand, but with any great increase in our industrial development would soon become a very serious menace to great expansion. It is a matter to which, so far as I know, very little consideration has been given even by the manufacturers themselves, because they have been so readily able in the past to overcome any shortage quickly because the supply was there. To-day that supply does not exist. I refer to what is known as "common labor." When I first became connected with the steel business, over 30 years ago, common labor was plentiful and cheap. With no disrespect to our fellow-citizens of Irish parentage, the Irishman was the principal supply for our common labor, and with equal respect to him it was the best we have ever had. He is a foreman to-day where he was a common workman. Recognizing the opportunities of this country his children went to the public schools, fitted themselves for higher positions, and to-day that supply is not available and never will be. Keen, bright, active, he soon rose to a higher realization of his powers and his opportunity. He was succeeded by the Slav and the Hun, some of whom are still with us. But that supply was never adequate to the increasing demand nor was it always the best labor except under certain conditions.

With larger industrial activity in Europe people of the class of labor that has been brought to our shores in these past ten years have ceased to be interested in the golden possibilities of the land of the free. Forced military service and higher taxation, with no change in the social condition of the masses, have not been powerful enough to drive them away from the land of their birth, and so latterly we have fallen back upon the Italian. With increasing dread the Italian Government has watched the flow of emigration; and the present trouble in Tripoli is but an expression of the desire on the part of that government to establish a colony near at home to retain her subjects where they will still be Italian; where the fruits of their labors will be for Italy, and where they will still be subject to military duty, or, if not, as colonists will still be Italian subjects. Other European countries, in their need of colonial expansion, have the same desire. In a sense they are jealous of the wonderful expansion of the United States; they fear our commercial supremacy as they have always feared the inventive genius of our citizens. The supply of common labor can no longer be obtained from Europe in sufficient volume to meet our needs. There seems to be an inherent opposition to the use of the Japanese and the Chinese. Yellow and white do not mix even in such a capacity, when it means the use of large numbers. We are not facing this condition yet, but to be forewarned is to be forearmed, and our manufacturers must reckon with this question at no distant day. Legislation, commercial and financial, we shall have, for the minds of our people are now bent on constructive statesmanship, and it will aid tremendously in the future industrial development of this middle west. The labor condition which manufacturers and railroads are facing will be harder to solve. Improved machinery, labor saving, will help in some respects, and the genius of the American manufacturer and operator will overcome much of the danger from lessening labor supply; but for many classes of work absolutely requiring manual labor it is a serious menace.

Still the future is bright with promise; and going forward in the spirit of liberality, of fairmindedness, of honesty, which has ever characterized the American manufacturer, the next quarter of a century should prove more prosperous and fuller of promise than any equal period in our history.

Production of Manganese Ores

Russia has furnished about 40 per cent. of the world's consumption of manganese ores in the past 10 years. Nearly the entire output of the Caucasus mines is exported, while Russian consumption is supplied from Nikopal in southern Russia, which produces about 25 per cent. as much as the Caucasus. India and Brazil are Russia's principal competitors in the world's markets. Russia's exports to Great Britain and Germany have increased greatly, but that country has contributed but a small part of the imports of the United States, which in the fiscal years ending June 30, 1909, 1910 and 1911, were 165,061, 237,037 and 209,211 gross tons, respectively. In the past three years British India has furnished about two-thirds of the manganese ore imported by this country. In the calendar year 1909 it shipped to the United States 145,140 gross tons, out of total imports of 212,765 tons. Brazil stood second with a total shipment to the United States of 35,600 tons.

The price of Russian manganese in Germany has been on the basis of 1.10 marks per unit for 50 per cent. manganese, with 0.1 mark added for each unit above or deducted for each unit below the standard. The maximum limit for phosphorus is 0.15 per cent. and for silica 9 per cent. In the United States the schedule of prices on which purchases of managanese ore are made by the Carnegie Steel Company is based on 26 cents per unit of manganese for a percentage over 49 and 5 cents a unit of iron, the base silica content being 8 per cent. and that of phosphorus 0.20 per cent. For each 1 per cent. in excess of 8 per cent. silica the deduction is 15 cents a ton. The production in the United States in 1909, the last year for which official statistics are available, was 1544 tons, the smallest year's output on record, comparing with an average of 6155 tons in the ten years beginning with 1900.

Wrought Iron Versus Steel Pipe

A Discussion of Accelerated Corrosion and of Physical Tests

In the ninth edition of its familiar pamphlet "Wrought Iron Pipe versus Steel Pipe" the Reading Iron Company makes some additions to the text, particularly under the heads of "Accelerated Corrosion Tests" and "Physical Tests." In support of the view that the respective losses of specimens of iron and steel immersed in acid solutions are not a reliable index of their relative resistance to corrosion, quotations are made from various sources. Among the citations are one from a paper by Dr. Cecil H. Desch before the West of Scotland Iron and Steel Institute and one from a report on accelerated corrosion tests by R. C. McBride, Youngstown, Ohio, both of which have already been published in *The Iron Age*. A quotation is also made from an article by Bradley Stoughton in the Engineering Magazine of July 1911, in which the writer says that in an accelerated test the action is so rapid that slight obstacles to corrosion are not felt and conditions which might oppose rusting for a considerable length of time will be practically without effect. Professor Stoughton also quotes from a report of the Committee on Corrosion of Iron and Steel, of the American Society for Testing Materials, the statement that "the results so far obtained show that the [accelerated acid] test is not generally applicable and in some cases may be very misleading."

The pamphlet says that in a test made in the Reading Iron Company's laboratory with samples of wrought iron sheets and steel sheets "the former showed a loss of 62 per cent and the latter only 26 per cent," by the acid test, "although the roof, of which the steel sheets formed the cover, had become so corroded after less than two years' use as to be utterly worn out, requiring its renewal." The pamphlet adds:

> As regards the argument advanced by the champions of the electrolytic theory of corrosion, that the purer the iron or steel, the greater will be its resistance against corrosion, we would say that, while many of the accelerated corrosion tests seem to confirm this contention, yet there are also many other tests which point quite in the opposite direction. * * * The chief engineer of a large water works in California stated to the writer that many years ago he built a water conduit of imported Swedish plates, riveted together; that they did not have enough of these plates, and were compelled to use common tank iron plates, which they found in stock, to complete the conduit. The result was that the portion made of tank iron (which is generally high in cinder) outlasted the Swedish iron (which is generally very low in cinder).
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> Professor Howe states that in cases in which strength may profitably be sacrificed for incorrodibility, it may perhaps be practicable to increase the mechanical protection (against corrosion) by increasing the cinder (vol. 8, page 248, Proceedings of American Society for Testing Materials). As the impurities in wrought iron are chiefly combined with the cinder contained therein, and since the more cinder, the greater its resistance against corrosion, it is evident that the argument that the purer the iron, the greater its resistance, is fallacious, at least as far as wrought iron is concerned.

In discussing the claim of some manufacturers that if wrought iron and steel are intended for the same purpose both should be subjected to the same physical tests and show equal results, the pamphlet says that the cinder inclosing the iron fibers is both the virtue and the fault of wrought iron. It gives resistance to corrosion and its rope-like structure distributes the shock and consequently resists fracture due to vibration longer than a homogeneous metal like steel. "But the very presence of these life-prolonging cinder fibers has a tendency to reduce the tensile strength and elongation, and it is therefore entirely wrong to require wrought iron to show high tensile strength, elongation, reduction of area, etc., when used for purposes where the factor of safety is large and the object desired is durability."

Citations are made from various cases which, it is stated, indicate the unreliability of physical tests as a guide to durability under ordinary strain. The opinion of the late Dr. Charles B. Dudley is quoted to the effect that "there is a very large amount of accumulated experience which seems to indicate that a metal like iron, which is believed to be a bundle of fibers, each one surrounded by slag and which has within itself the power of the distribution of the strain, is a more reliable metal when subjected to bending stresses than a perfectly homogeneous metal like steel." The pamphlet then comments as follows:

> It is only within some few years that the difference in the behavior of wrought iron and soft steel has been fully appreciated by many practical men, but as yet little attention has been paid to it by teachers in our engineering colleges, and, while more and more of the older engineers and architects, who have had long practical experience, are taking this difference into consideration when drawing up their specifications, many of the younger members of the professions are calling for the same physical tests required for soft steel when drawing up specifications for wrought iron. It is to be hoped that the new specifications for wrought iron now under consideration by a committee of the American Society for Testing Materials will help to remove this misunderstanding and induce more of the engineering professors to embody them in their curriculum.
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> When standard pipe is used for ordinary purposes, the factor of safety is so large that the hydraulic pressure test, which not only tests the strength of the metal, but the tightness of the weld as well, makes any other physical test superfluous, and many of the recent specifications by many leading architects and engineers omit all physical and chemical tests for pipe outside of the hydraulic pressure test, but insist that the iron be made from puddled pig iron, without the admixture of any scrap, and the use of iron made by busheling or from box fagots is prohibited.

The Harbison-Walker Refractories Company

The annual report of the Harbison-Walker Refractories Company, Pittsburgh, for the year ended September 30, 1911, has been mailed to stockholders in advance of the annual meeting to be held January 15, 1912. The income account is as follows, compared with the previous year:

	1911.	1910.
Earnings	$1,686,335	$2,073,341
Less improvements and depreciation	243,134	205,595
Net profits	1,443,201	1,867,746
Bond interest	77,000	88,875
Balance for dividends	1,366,201	1,778,871
Preferred dividends	576,000	576,000
	789,201	1,202,871
Common dividends	360,000	270,000
Surplus for year	430,201	932,871
Total surplus	$5,215,060	$4,784,860

The condensed balance sheet as of September 30 compares as follows:

Assets.	1911.	1910.
Property account	$28,635,163	$28,599,397
Betterments completed	1,284,223	1,147,700
Betterments uncompleted	400,642	497,551
Deferred charges	295,877	298,608
Current Assets:		
Inventories at cost	1,699,778	1,590,759
Accounts receivable	1,257,210	1,407,082
Bills receivable	20,412	24,105
Cash	689,074	565,437
Investment securities	580,425	594,399
Total assets	$34,862,804	$34,725,039
Liabilities.		
Preferred stock	$9,600,000	$9,600,000
Common stock	18,000,000	18,000,000
Bonds outstanding	1,265,000	1,565,000
Reserve for bonds, interest, taxes, etc.	560,261	469,198
Current liabilities	222,483	305,981
Surplus	5,215,060	4,784,860
Total liabilities	$34,862,804	$34,725,039

The company has purchased and cancelled as per sinking fund requirements $1,585,000 bonds since its organization, and it has further cancelled in anticipation of sinking fund requirements $650,000, leaving total bonds now outstanding of $1,265,000 out of the original bond issue of $3,500,000. There was expended for improvements during the past year, increasing the capacity and efficiency of the works, the sum of $116,326, and in addition to the charges for depreciation of plants there was charged off $90,006 for depreciation of mining and tram outfits and $36,802 for depletion of clay, coal and ganister properties. The profits, after paying the regular 6 per cent. on the preferred stock, were equal to 4.33 per cent. on the common stock. The latter received 2 per cent. in dividends for the year, leaving the sum of $430,201 to be carried to surplus.

An agreement has been reached between the city of Buffalo and the Erie, Lehigh Valley, Nickel Plate and Buffalo Creek railroad companies for the building of lift bridges over the Buffalo River, making possible the extension of the river-deepening improvement work to Abbott road. The bridges will be of the single span lift type and will give a clearance of 100 ft. and a 225-ft. channel. Contracts will be let as soon as specifications can be drawn.

Women in the Metal Trades

A special report has just been issued by the United States Bureau of Labor dealing with the employment of women in the metal trades. As the greater proportion of women employed in this group of industries are machine operators, the report is, as a matter of fact, a study of accidents to machine operators in the class of establishments considered. Men are employed in the same occupations as the women in the metal industries, and consequently an opportunity is also afforded of comparing the liability to accidents of both sexes working under similar conditions.

The investigation covered the chief manufacturing centers of the metal trades in Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, Maryland, Ohio, Illinois, Indiana, Michigan, Minnesota, Iowa and Missouri. Visits were made to 346 establishments and detailed information secured for the employees of 246. Complete data were secured for a total of 85,225 wage-earners, of whom 69 per cent. were males and 27 per cent. females 16 years of age or over. Only about 4 per cent. of the total were children of both sexes under 16 years of age. The greatest stress was placed upon foundries and upon establishments engaged in the manufacture of bolts, screws, brass ware, hardware, jewelry and tin cans, although information was also obtained for employees representing 20 other important branches of the metal trades, such as cutlery, fire-arms, tin plate and tinware.

Extent to Which Women Are Employed

About one-fourth of the total number of wage-earners, 16 years of age or over, in establishments manufacturing bolts and screws and tin cans are women, while about one-fifth of the total number in brass ware and one-sixth of those in hardware manufacturing plants are females. The general tendency in the metal trades seems to be toward the increased employment of girls over 16 years of age. The reasons given for this are that the girl of 16 is more mature than the boy of the same age and that she is steadier and more reliable and usually more ambitious than a boy of the same age or under. In other words, the possibility of better service and less responsibility, with little added cost, has caused the employer to substitute in many occupations the girl of 16 and upward for the boy under that age. The only difficulty which presents itself to the employer in this situation is the impossibility of picking out leading men and foremen from the women workers. The girls do not furnish material for this purpose. Either the boy above 16 must be attracted by higher pay or special methods must be adopted for the training of boys for these positions.

Hours of Work

Although it was ascertained that the number of children employed, as compared with the adult workers, was small, the additional fact was developed that the proportion of children under 16 who work 60 hours each week was nearly three times as large as among the women, and over 60 per cent. more than among the men. This situation was due to a few large plants in other States than Illinois, New York and Ohio which employ an unusually large number of this class of employees. The States excepted have a legal inhibition against employees under 16 years of age working 60 hours per week. The full 60-hour week was found still to be the practice of a little more than one-sixth of the total number of 246 establishments investigated. The other plants fell into two groups: 1. Those having the 10-hour day with varying concessions in early Saturday closing. 2. Those having a working day of nine hours or less. Of the entire number of 85,225 employees studied, 29 per cent. of the males and 33 per cent. of the females 16 years of age or over, together with 29 per cent. of the children, worked less than 55 hours each week; 51 per cent. of the adult males, 56 per cent. of the adult females and 39 per cent. of the children had a working week of 55 but less than 60 hours; and 20 per cent. of the adult males, 11 per cent. of the adult females and 32 per cent. of the children under 16 years of age were employed in plants which were in operation for a period of 60 hours each week.

Accidents

As regards accident rates in different trades, exhaustive information from 60 establishments with 40,719 employees showed that 11.47 wage-earners were injured in 1907 out of each 100 employed. Of this average 6.11 employees for each 100 represented both sexes 16 years of age or over, while 2.01 represented males and 3.35 females less than 16 years old. The accident rate in a number of the leading branches of the metal trades was for both men and women adult workers as follows:

Industry.	Number injured per 100 employed.
Bolts and screws	0.39
Brass ware	18.52
Enameled ware	2.77
Firearms and ammunition	3.50
Hardware	9.50

The accident rate was generally smaller for women than for men, and the latter were usually found to be in the occupations of greater hazard. Children under 16 years of age formed but a small percentage of the total number of wage-earners studied, and, due consideration being given to relative numbers, had a much smaller accident rate than the adults. Out of a total of 571 accidents for all classes of employees of which the underlying causes were carefully studied, 174 were discovered to arise from careless manipulation of machinery, 56 to the taking of risks by employees, 6 to inattention to surroundings, 26 to imperfect mechanism and 75 to unforeseen liability. The greatest number of accidents were recorded in connection with the operation of stamping presses which are largely used in the manufacture of brass ware and hardware. The hours in all establishments investigated during which the greatest number of accidents occurred were between eight and nine o'clock in the morning and between three and four in the afternoon.

Conclusions Relative to Accidents in the Metal Trades

The summary conclusions which were reached as the result of the entire inquiry were:

1. The hazard to women in the metal-working industries is considerable.
2. When men and women work at the same task its dangers menace the women much more seriously.
3. The employment of children in dangerous occupations is rare and is decreasing.
4. Negligence of the worker as a cause of accident has been greatly overemphasized.
5. The accidents of most frequent occurrence are largely preventable.

Sixty-seven Years of Charcoal Iron Production.—The Shelby Iron Company, Shelby, Ala., on November 21, blew in its No. 2 furnace, which had been out for five months, during which time it was partly reconstructed while several improvements were added. This furnace and its predecessors represent a long series of blasts, going back to a five-ton furnace built in 1844. From time to time there have been rebuildings with increase of size, and to-day the plant consists of two 65 ft. modern stacks. From the beginning the policy of the successive managements has been to make a special grade of warm blast iron for the manufacture of car wheels, chilled rolls and special castings. All the ore used has been mined from deposits of brown ore in immediate proximity to the plant. These ores are high in iron and low in phosphorus and sulphur, with sufficient manganese to produce the desired mixture.

The Pennsylvania Railroad has let contracts for new construction work, which, when completed, will have cost approximately $3,000,000. The new work includes six miles of track elevation for six tracks in place of the present four surface tracks through Rahway and Linden, N. J., and the elimination of 14 grade crossings. With the completion of this work the Pennsylvania Railroad will have eliminated every grade crossing in the thickly populated sections through which the New York division runs. The elevation of tracks in Rahway and Linden will necessitate an embankment of nearly 2,000,000 cubic yards of earth and will require approximately 150,000 cubic yards of masonry. The bridges over the streets will consist of steel girders with solid reinforced concrete floors similar to those recently constructed on the elevation at Bristol, Pa.

Overhead Expense

How It Should Be Equitably Apportioned

BY A CONNECTICUT MANUFACTURER.

The editorial in *The Iron Age* of October 19, entitled "Overhead Expense and Cost Systems," touches on a subject which comes strongly home to me. I have given the matter a great deal of study and have inaugurated some changes in the methods which will without doubt do away with the greater part of the difficulty mentioned. Perhaps your readers will be able to take to themselves and apply to their own establishments, if not the details, yet the principles which will be shown to underlie the changes in methods mentioned.

I have found that most of the available treatises on the subject of factory accounting deal only with a class of establishment represented by the machine-tool builders. In this class the machinery consists of relatively large units, the operations are of considerable duration, and the manufactured articles are comparatively large. On such work as this it is not so difficult a task to keep track of individual expenses, whether they be of productive labor, material or overhead. All through this State, however, are scattered shops in which the machinery consists of many duplicate presses, in which the operations are repeated at the rate of often 150 per minute, and in which the manufactured articles are small and handled by the thousand. The problems of cost accounting presented by such conditions have been rarely touched upon in any treatises, so that we have been left to develop systems to suit our own requirements.

The Flat Rate Method

In the early days we calculated our costs and apportioned our overhead expense by what is now called the "flat rate" method. The shop rooms grew as they could; usually that of the most aggressive and capable foremen grew faster than the rest, the most important thing being rate of production. The flat rate was usually calculated by the following ratio:

$$\frac{\text{Total shop expenses}}{\text{Total manufacturing labor and material}} = \text{Per cent factor.}$$

Some shops found this percentage to be 135, others 150, and we considered that an article using 60 cents per thousand for labor and 40 cents per thousand for material cost us $1.35 or $1.50 as the case might be. A great deal of business was taken on such figuring and good dividends were paid. It is evident to us all now, of course, that such a cost represented only average conditions and was grossly incorrect in many cases.

Later we became more enlightened and realized the absurdity of such loose calculations. But realizing a bad condition and hitting upon a good remedy are two quite different things; we are still working to overcome this difficulty and are constantly looking for some improvement in our accounting which will make our costs more accurate without increasing our clerical expense beyond reason. We have always the desire to get actual costs on the one hand and the necessity for economy in our accounting on the other, and I do not hesitate to say that up to the present time all cost systems are compromises between what we would like to do and what we are able to do. Undoubtedly, the compromise becomes each year more favorable to the manufacturer; each year we are able to rearrange our methods in some way to give us costs more true to actual conditions.

Classifying the Product, Machinery and Operations

The first marked step away from the previously mentioned flat rate system was to classify the product and to divide up the shop into smaller shops, or rooms, keeping a separate set of records for each room. Thus there was the lamp room, the hinge room, the wire-goods room and the button shop. Right on the heels of this change came a more distinct step in advance. Instead of subdividing by class of product, the subdivision considered first the class of machinery and the nature of the operations. Thus, instead of the above mentioned rooms, we had the blanking room, the stamping room, the assembling room, the dip and plating room and the packing room. The basis for this subdivision is now well known, the aim being to classify the work and equipment into groups in which the accompanying expense, or "overhead," bears a comparatively fixed ratio to the productive labor. This arrangement is carried out almost solely to simplify the accounting and to do away with the use of an average overhead ratio.

After this subdivision had been carried out, we found to our satisfaction that the overhead expense in the assembling room, for example, was only about one-half that in the cutting-up room; we now had a distinct ratio for each room which our reason told us must be far more accurate than had been the old flat rate. Our cost was now made up roughly of the following components:

Productive labor	$1.00	
Room overhead	1.00	Plus material
General expense	1.00	

The third item, General Expense, was and is made up of all such expenses as might be considered not strictly chargeable to the rooms individually; it is supposed to include a type of expense from the incurrence of which the whole shop shares equally. It will be found that this General Expense is often equal to the Room Overhead and is a matter of no little importance in the cost of an article, so that it was not strange that there should occur to a manufacturer, striving to meet close competition, the idea that perhaps all of this extra $2 added to his $1 of productive labor might not belong there. That is the way it struck me.

An Unsatisfactory Compromise

Having developed my system to the above point, I saw I was in a measure still disregarding actual conditions and clinging to the habit of adding a stated amount to each article based on the productive labor cost. Even with the gain I had made by classifying my equipment, I was still using an unsatisfactory compromise; although my rooms were so arranged that there was a fairly equitable apportionment of Room Overhead expense, I was still apportioning my General Expense by the obsolete flat rate system. It was evident to me that, if I was to have my costs approach still closer to actual conditions, I must try to do away with the flat rate and must recover my general expenses by some method which more accurately reflected actual conditions, or else which possessed a flexibility far removed from my hard and fast rule. I felt that there was occurring in my shop just what is described in your editorial; that I was making my easily handled standard work pay for the special and bothersome work.

Arriving at such a conclusion was nothing more nor less than natural. My methods of manufacture and my equipment were strictly up-to-date, so that I could not defend my loss of certain business except in a very few ways, and I chose to believe that this loss was due mainly to fallacies in my methods of figuring costs. Other makers were turning out the standard products on which I had worked for years and they repeatedly quoted prices below mine. In spite of my having all the tools and the skill, I lost orders to those competitors when my common sense told me that I could turn out the products as cheaply as they, if not more cheaply. I put aside the suggestion that they were losing money on the business they took away from me. It is better not to count too much on an adversary being a fool.

A study of the whole matter resulted, as I have said, in a decision to substitute for the hard and fast rule then in force a compromise which would allow a knowledge of actual conditions to be used in computing a "cost." I was confident that my records of Prime Cost (material and productive labor) were quite accurate and the new

plan considered them so. The overhead expense, however, was to be differently handled, especially that part of the overhead which is called General Expense. My investigation had shown that a great deal of this General Expense was really of a specific nature; while it was not chargeable to any one room, or rooms, neither was it in justice chargeable to all classes of work alike. Some of it was chargeable to a certain class of articles, some to heavy work, some to development, others to betterment. Instead, then, of dumping all this expense into the General Expense account and leveling it out at a flat rate on all articles regardless of where it really belonged, it was planned to keep a separate account for each kind, using quite a few headings at first.

Subdivision of General Expense

A more graphic picture of the plan would be to explain conditions thus. Previously there had been a large bin marked General Expense into which had gone thousands of dollars a year. To look into this bin toward the end of the year, with an idea of ascertaining just what was in it, resulted usually in a throwing up of the hands. In future, therefore, it was intended to divide up the bin into a number of smaller compartments, marking each with a statement as to what it was intended to contain. It would then be an easy matter to note at any time the nature of the contents of the bin and the comparative contents of each compartment.

The General Expense account is therefore to be given a number of subdivisions; also the sales account. There will then be available a record of what kinds and amounts of expense have been incurred, and what kinds and quantities of goods have been sold. Such records do not particularly complicate the accounting, the only important point being to see that a sufficiently intelligent person shall indicate in what class each sales item and each expense item belongs. The following selections from my General Expense account will indicate how the plan was carried out:

1. Selling expense. Where and for what class of goods.
2. Samples, etc. What class of goods.
3. Expenses to increase production. Class of goods.
4. Expenses to reduce costs. Class of goods.
5. Expenses due to defective design, material, or workmanship. Give room and class.
6. Building upkeep. Give building.
7. Administration.
8. Storerooms, offices, etc.

It will be noted that some expenses usually included in General Expense do not appear. For example, cost of power plant I subdivided and charged against the rooms by a method which, though empirical, gave a much closer approximation of exact conditions than does distribution through the General Expense account. Likewise the interdepartment transportation, which was charged against the rooms, each room standing the expense for trucking out. This last was not hard to do since my truckmen were paid on a piece-work basis, the rate varying with the distance traveled, such as from one room to another.

During the year following the collection and recording of expenses in detail considerable surprise was caused by the unexpected volume of some expenses and the paucity of others. A few months was sufficient to show up the big items, and the records were a constant source of satisfaction because they formed such a clear vindication of the wisdom of the change.

The Apportionment of Expense Items

At the end of the year came the next important step —the apportionment. It was not enough to simply classify the expenses; they must now be studied, item by item, with the end in view of deciding just what method should be used in each case to recover the expenses. This I did, my course of reasoning being indicated by the following examples:

The expense to increase production (3) was greatest on my railroad lamp goods, owing to a sudden influx of orders that year from railroad purchasing agents who had previously been following a policy of retrenchment. A calculation showed me that my selling prices would not stand for the loading of all this expense in one year; so I decided to divide it into three instalments for distribution over three years. Under the old method I should have lost sight of all this and have allowed the whole amount to burden one year's work.

The expense due to defective work and goods I found to be heaviest on my fancy metal novelty line. This did not at all surprise me, as I well knew the exacting conditions and the quality of finish necessary in that work. I was glad, however, to know definitely how much I was losing that way and just what ratio it bore to my sales on such articles.

The storeroom expense (8) was found to be made up of three divisions: raw material, semi-finished goods and finished goods. The handling of the raw material seemed to me best charged against the metal itself; in the past, a light article with a high labor cost bore more of this expense than did a heavy article with a low labor cost. And I found that the greater part of the expense for storing semi-finished goods was chargeable to my metal button business.

Getting Greater Leeway in Fixing a Selling Price

It will be clear that in the end I had a set of figures of this kind which gave me great leeway in fixing a selling price or in judging whether a certain line was profitable or not. The calculated costs as turned in from my cost office were now much less than they had been. But to the cost-office total I must add an amount dictated by my judgment as being correct. For example, I am to quote prices on the coming year's business with a customer who uses shoe-hardware and am figuring the cost on a shoe eyelet. My labor cost is $0.06 per thousand, and the material is $0.10 per thousand. Under the old ruling my overhead would be $0.18 per thousand, making a total cost for labor, material and overhead of $0.34 per thousand. But a glance at my new classification of expenses shows me that this class of work is not in the least troublesome, calls for practically no selling expense, nor does it go near the storerooms. I will therefore add only enough to cover the few actually general expenses which it should bear and fix my selling price accordingly, quoting, let us say, $0.27½ per thousand, based on a cost of $0.25 and giving me at least 10 per cent. profit.

On certain lamp burners of an expensive type, however, my new method gives me overheads much higher than before. This I find is due to storage cost for goods in process, for expenses due to repairs on defective work, for work spoiled beyond repair, etc. The burners are made up of so many parts that these latter troubles occur much more often than on simple goods such as eyelets, buckles and the like. The narrow margin on some of the lamps, between cost and selling price, opened my eyes to the necessity for alterations of method or design to make the business more profitable. The generous margin on other lines, where my equipment is first-class but running rather intermittently, prompted me to urge my salesmen to take more of such business, which I can help them to get by quotations more favorable than formerly.

To me the new method promises results, and it does not take a stretch of the imagination to picture like benefits in establishments manufacturing different lines. The process is really nothing more nor less than placing in the hands of those whose duty it is to make prices a set of records of great value in judging how profitable the manufacture of a certain line, or article, may be. And it seems to me that the possibilities are even greater than I have outlined.

New York City Taxation.—Prominent business men of the city of New York will hold a conference on city taxation in the auditorium of the Merchants' Association, 54 Lafayette street, at 3.30 p. m., Wednesday, December 6. The public is invited to attend. A circular announcement of this meeting states that those who are calling it are confident that the gradual reduction of the rate of taxation on all buildings in the city to one-half the rate of taxation on all land is an important measure of relief to all business men and manufacturers of the city. A bill to effect such relief from the present system of taxation is to be introduced in the next session of the Legislature. George White will preside over the conference and the speakers will be John J. Hopper, Charles T. Root and Mornay Williams.

Routing Material Through Shop Departments

Simple System in Use at Works of the National Brake & Electric Company, Milwaukee

In the manufacture of air-brake equipments and motor-driven air compressors, a wide variety of pieces are required to be handled. Pioneer in this field, the National Brake & Electric Company, Milwaukee, manufactures an extended line of sizes and types. The large number of different machining operations and materials used and the movement of material through foundry, forge and machine shops have in them complexities which make the system of this company's production department of interest. Authority and directions for the purchase or manufacture of all material issue from the cost or production department. The check on the finished material manufactured in the shops or purchased outside is had through the medium of the general shop store. Into this store every piece of finished material or group of materials making one finished unit are delivered, either actually, or if the parts are moving right through to shipment, by record. Similarly, every finished part is issued from the storeroom. The record of this movement through the storeroom is a continuous inventory, recorded on the form shown in Fig. 1. These forms are keyed for different classes of material to permit classified binding in loose leaf books for reference. The records are obtained as follows:

When a general order is to be put through the shop, the production department sends to each department in which work is to be done on the order, the forms shown in Figs. 2 and 3. On the former is the general description of the material making up the order; on the latter the specifications of what is required from the particular department to which it is sent. Copies of these are also sent to the storeroom to be entered up in the first column, Fig. 1. This affords the storekeeper the necessary information to check back the movement through the store room of the correct amount of material for completing the order in question. When castings are to be made the form Fig. 4 is issued in duplicate to the pattern shop and foundry. If it is a stock casting this form also goes to the storeroom so that castings already made may be applied on the order.

When any material is to be issued to a department from the storeroom, that department makes requisition on the form Fig. 5 in duplicate, one copy being retained for filing in the storeroom and the other going to the cost department. This constitutes a storeroom receipt for the material delivered and is the source of the

National Brake & Electric Co.
MILWAUKEE

FINISHED STOCK RECORD

Article
Type or Size
Drwg No.
Style No. Pat. No.
Bin No. Min. Folio No.

	ORDERS IN SHOP			AMT. DUE ON ORDER		RECEIVED			ISSUED		
	DATE	ORDER NO.	QUANTITY	QUANTITY	ORDER NO.	DATE	ORDER NO.	QUANTITY	DATE	ORDER NO.	QUANTITY

Fig. 1.—Record of Movement of Finished Material or Products Through the Storeroom.—Loose Leaf, Printed Both Sides, in Light Red and Blue Ruling; Size 9½ x 12 In.

National Brake & Electric Co.

Stock Order Dept's Date
Gen'l Order For

QUANTITY	DESCRIPTION	LABOR	MATERIAL

Fig. 2.—Form of Order to a Department for Material; Black Ruling on White Sheet 8½ x 11 In.

SPECIFICATION DEPARTMENT SHEET NO.

National Brake & Electric Company

DEPT. MILWAUKEE, 19

LIST OF MATERIAL REQUIRED FOR

ORDER NO.

NUMBER OF PIECES	MATERIAL AND NAME OF PIECE	WEIGHT	PRICE	PATTERN NUMBER	DRAWING NUMBER	LABOR ON FINISHED STOCK	COST OF MATERIAL

Fig. 3.—Form Covering Specifications to Be Met by a Given Department; Blue Ruling; Size 8½ x 14 In.

ORIGINAL

National Brake & Electric Company

FOUNDRY AND STOREROOM 191

Please make the following Castings and deliver to Dept. as soon as possible.

NUMBER OF PIECES	MATERIAL	NAME OF PIECE	PATTERN NUMBER	ORDER NUMBER

DELIVERED TO FACTORY

DATE	Number of Pieces	WEIGHT	DATE	Number of Pieces	WEIGHT	DATE	Number of Pieces	WEIGHT	DATE	Number of Pieces	WEIGHT
TOTALS											

DATE COMPLETED O.K.

Fig. 4.—Form Issued in Duplicate for Pattern Shop and Foundry for Castings to be Made; Size 8½ x 5½ In.

Date _____ 19____ Stock Order No. _____

Delivered to Dep't _____ by Storeroom on above order.

NAMES	POUNDS	DESCRIPTION	AMOUNT	

Delivered _____ 19____

O. K. _____ _____ Foreman

Blue Forms Must be Used in Ordering Material for Productive Orders

Fig. 5.—Form of Requisition on Storeroom, 6 x 4 In.

No. _____ Date _____ 190__ Stock Order No. _____

Delivered to Storeroom by Dept. _____ on above order.

PIECES	POUNDS	DESCRIPTION	PIECES OR POUNDS ON	DATE	AMOUNT	
		Total Delivery to Date.				

O. K. _____ _____ Foreman

White Forms for Delivery to Storeroom. Pink Forms for Other Departments.

Fig. 6.—Form Covering Department Deliveries to Storeroom.

COST DEPARTMENT

NATIONAL BRAKE & ELECTRIC CO.

NAME _____ NO. _____

MILWAUKEE, _____ 19

ORDER NO.	OPERATION AND NAME OF PIECE	JOB NUMBER	PIECES NUMBER	HOURS DAY WORK	HOURS OVER TIME	HOURS PREMIUM WORK	AMOUNT

NOTE—Order Number, Operation, Name of Piece, Job Number, Pieces Finished and Hours must Correspond with Premium Job

Approved. _____ Foreman.

Fig. 7.—Record of Workmen's Time; Yellow Sheet, 8 x 5½ In.

record in column 4 of Fig. 1. Column 2 is a check between columns 1 and 4 of this form.

When work on any part is completed in one department ready for shipment or final assembly, it is delivered to the store, the form Fig. 6 being used in duplicate, one form going to the storeroom as the basis for the record in column 3 of Fig. 1 and the original being kept by the foreman of the department as a receipt for the delivery of the material. Parts not finished in one department and moving to another are recorded only between the foremen of these departments by means of a form practically identical with Fig. 6, the original signed by the foreman receiving the parts being kept by the department delivering them, as a receipt, the duplicate going with the work.

Excess parts issued from the storeroom are returned with a form in duplicate, also like Fig. 6, one going to the storekeeper for the balancing of his inventory and the other to the cost department. When work in any department is completed on any one order and when the storeroom has handled the material necessary to fill this order all of the original forms Figs. 2 and 3 are returned to the cost department, where labor and material costs are entered up.

Each piece going through the shop has on it conspicuously the number of the shop order upon which it is to

Fig. 8—View of the Storeroom in the Plant of the National Brake & Electric Company.

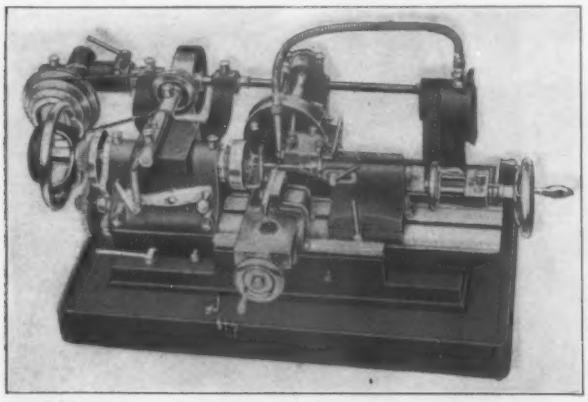
be applied and the workman makes out his time on the time card Fig. 7. On all of the work for which it has been possible to establish a time allowance for machining a premium system is operated, the employee sharing equally with the company the profit in the work done in excess of the allotment.

The storeroom of the shop, which is a part of the recent additions to the plant, is exceptional in its construction, capacity and equipment. A view of it is shown in Fig. 8. It is of reinforced concrete construction of the mushroom type, absolutely fireproof in itself and equipped with a sprinkler system for the protection of the material stored. It is lighted with incandescent mantle clusters. Small parts are stored in steel rack shelves and the larger parts are stored on the floor in allotted spaces with ample aisles for access. The floor is of concrete and the heavy parts are handled on portable crane trucks.

The New Waltham Thread Miller

Two sizes of thread milling machine which embody in their construction several improvements over the miller illustrated in *The Iron Age* December 8, 1910, have been brought out by the Waltham Machine Works, Waltham, Mass. The principal changes as compared with the earlier machine are a constant speed drive, a new location for the friction clutch controlling the carriage motion, an increased variation for the lead screw and the ability to handle larger pieces of work.

The machine is driven from a constant speed shaft attached to brackets on the rear of the machine which in turn drives the cutter spindle through a worm and worm wheel sliding on the squared portions of both the constant speed and the cutter head driving shafts. The right end of the former shaft is connected to a pump that supplies oil to the work with the shaft running in either direction. The pump with its connection to the shaft and the tube for conveying the lubricant to the piece being milled are both



An Improved Machine for Milling Threads Built by the Waltham Machine Works, Waltham, Mass.

shown in the accompanying engraving. A shaft mounted at right angles to the constant speed shaft in the bracket which serves as the bearing for the opposite end is driven by a worm and worm gear and is belted to the work spindle on the head stock. This belt runs over a four-step cone pulley which can be changed if desired to give any one of the 16 different feeds that are available by shifting the belt and changing the pulley. Longitudinal adjustment is provided for the feed driving shaft to facilitate the shifting of the belt and secure the desired tension.

The oil which is pumped on the work after leaving the cutter falls into a receptacle on the cross slide and is led away through a channel to the rear of the machine. This channel terminates adjacent to the oil reservoir which is situated at the lower right corner where the pan base is sufficiently deep to hold a supply. All the other parts of the base slope toward this point.

On the new machine the clutch that is automatically released when the cut is completed is placed directly on the work spindle. A large diameter hand wheel is mounted on this spindle to return the carriage to the starting point without disengaging the gearing. If desired the gearing can be disengaged and the carriage moved by the hand wheel on the right of the lead screw.

The compensating bar for varying the lead of the screw has been altered so that enough variation to take care of the shrinkage which occurs in the hardening process can be secured. The increase in the amount of lead which it is possible to obtain is indicated by a pointer attached to the swiveling bar and reaching through to the graduated index on the front of the machine. Two thumb screws on the front of the machine regulate the movement of the compensating bar. The right lead screw bearing is threaded and can be rotated by a lever. In this way the location of the carriage with reference to the cut can be changed, thus making a fine adjustment of the cutter relative to the work previously milled possible.

Tapers which are too slight to be cut with the regular taper attachment can be obtained by the use of the cross slide with which the tail stock is provided or this arrangement can also be employed to rectify the alignment of the centers if that should become necessary.

The centers in the new machine have been raised to accommodate work 3 in. in diameter if the pitch of the thread is not too coarse. The bed has been extended so that longer pieces can be mounted between centers and the travel of the carriage has been increased from 6 to 7¼ in. The larger size of miller is 6 in. longer and weighs 50 lb. more than the smaller one, the latter weighing 310 lb.

Producer Gas Investigations

A résumé of producer gas investigations has been published in Bulletin 13, of the Bureau of Mines, Department of the Interior. It makes a book of 405 pages, illustrated with 12 plates and 250 separate diagrams and charts. It is presented under the joint authorship of Professor R. H. Fernald and C. D. Smith, and is divided into three parts, covering producer gas and producer gas plants; reports of investigations at St. Louis and Norfolk, and reports of investigations at Pittsburgh. The investigations cover the period from October 1, 1904, to June 30, 1910. They thus begin with the operations at the coal-testing plant erected at Louisiana Purchase Exposition at St. Louis. The investigations are particularly important to localities remote from coal supply; marked economy, it is emphasized, can be gained by a general use of the gas producer in New England. The size of the publication is an indication of the monumental character of its contributions to industrial engineering, and the authors and the auspices of its publication give it, of course, the desired stamp of authenticity and reliability.

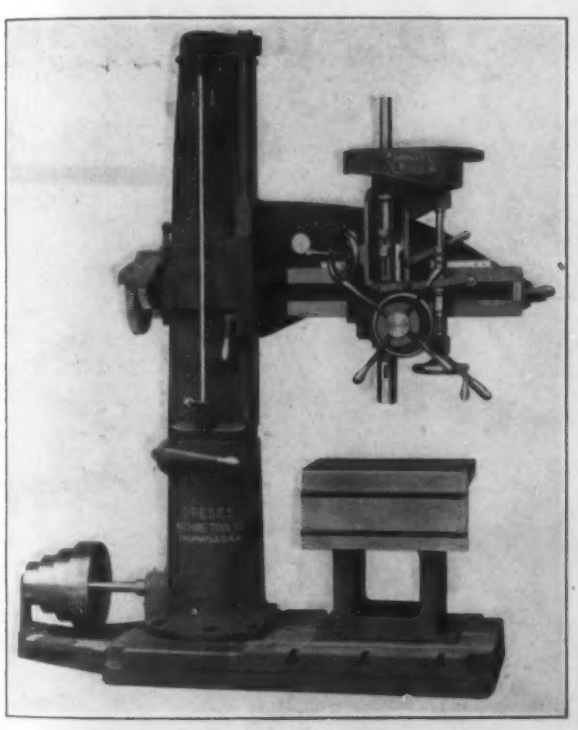
General Electric Air Compressor Sales.—The General Electric Company, Schenectady, N. Y., reports the following sale of centrifugal air compressors: Skinner Engine Company, Erie, Pa., for blowing its new 54-in. cupola; Lamson Consolidated Store Service Company, for cash conveyor system in Mandel Brothers' store, Chicago; Lunkenheimer Company, Cincinnati, Ohio, for use with oil-fired furnace; Great Western Smelting & Refining Company, San Francisco, for use with oil-fired furnace; Universal Pneumatic Transmission Company, for cash conveyor system in J. M. Adams's store, Buffalo, N. Y.; American Shop Equipment Company, Detroit, Mich., for use with oil-fired furnace; American Steam Pump Company, Battle Creek, Mich., for use with a 42-in. cupola; two to Guarantee Construction Company, New York, one for installation at Jonquiere, Quebec, and one for Suburban Light & Power Company, Chicago, for use in connection with ash-handling systems; two to Dodge Bros., Detroit, Mich., for use with oil-fired furnaces.

At the regular monthly meeting of the Cleveland Engineering Society, Cleveland, Ohio, December 12, Norman Macbeth, illuminating engineer of the Westinghouse Lamp Company, will present a paper on "Applications of Illuminating Engineering in Store and Factory." At a special meeting November 28 Dr. William C. Geer, chief engineer of the B. F. Goodrich Company, Akron, Ohio, presented a paper on "Rubber."

An Improved Simplex Radial Drill

In addition to the preliminary steps taken in the redesigning of its entire line of radial drills which were illustrated in *The Iron Age*, December 30, 1909, the Dreses Machine Tool Company, 227 West McMicken avenue, Cincinnati, Ohio, has made some other changes in its 31 and 36-in. Simplex radial drills. Simplicity in the construction and mechanism was the main object sought in changing the design of these machine tools, and they are intended for use in repair shops and places where complicated and delicate tools are not wanted nor desirable as well as other situations where heavy duty is required. Although as far as possible the design of these machines has been simplified, it is emphasized that none of the modern features essential for rapid production are lacking. All the mechanisms have been condensed to the simplest form with a view to making the oiling easy, reducing the wear and tear and decreasing the changes for getting out of order as far as possible.

The construction of the column and the arm is about the same as that of the 36-in. drill which was illustrated less than two years ago, the main difference being in the manner of supporting the table. In the older machine the column fitted into a stump and rested upon rollers for easy movement, while the table encircled the lower stump and a



The Redesigned Simplex Radial Drill Built by the Dreses Machine Tool Company, Cincinnati, Ohio.

portion of the column. Depressing a lever corresponding to that shown at the left of the column in the accompanying engraving bound the column carrying stump, the column and the table substantially together. This lever was always within reach of the operator so that the parts mentioned could be clamped or released with his left hand without changing his position, a tension screw below the lever always insuring a working fit. The table was supported at its outer end by a stand having an adjusting screw so that it could always be kept at right angles to the spindle. In the new machine, however, the table is separated from the column, an arrangement which makes it available for the full horizontal traverse of the spindle. The shape of the column is such as to give resistance to the tendency to spring while locating of a single pair of bevel gears on the inside results in the elimination on the driving mechanism of one long shaft, two gears and two bearings, which, as is readily apparent, is a great advantage.

The spindle has a ball thrust bearing and is started, stopped and reversed by the well-known three bevel gear arrangement which engages one or the other of the driving gears by a friction clutch. This clutch is operated by the long lever shown at the right of the head below the arm. An automatic stop, graduated depth gauge and a four-handle quick return are provided. Any of the levers of the quick return pilot wheel can engage and disengage the feed instantly, while an automatic locking plug keeps it disengaged when tapping is being done. The head is moved on the rail by a spiral and rack and is clamped by the lever at the back of the vertical shaft carrying the feed driving worm. This arrangement combines minute adjustment with rapid setting. The feed is of the all-geared type and has four changes which can be varied while the machine is in operation, the changes being secured by a shiftable knurled collar on the feed rod.

Two sizes of drills known as the 31 and the 36 in. machines are built, and the following table gives the principal dimensions and specifications of the two sizes:

	31-In.	36-In.
Range, in.	63	73
Distance between spindle and base, in.	51	58
Traverse of head on arm, in.	21	26
Traverse of arm on column, in.	32	38
Minimum distance between column and spindle, in.	10	10
Traverse of spindle, in.	12	12
Minimum diameter of spindle, in.	1 9/16	1 9/16
Morse taper of spindle	No. 4	No. 4
Number of feed changes	4	4
Minimum feed per revolution of spindle, in.	0.007	0.007
Maximum speed per revolution of spindle, in.	0.023	0.023
Number of speed changes	8	8
Minimum speed, r. p. m.	16	16
Maximum speed, r. p. m.	390	390
Size of table, in.	17x22	17x22
Over-all height, in.	85	94
Floor space required, ft.	6x8	6½x9
Maximum pipe tap handled, in.	2	2
Maximum standard tap handled, in.	1¼	1¼
Maximum diameter of hole in cast iron, in.	2½	2½
Maximum diameter of hole in steel, in.	1¾	1¾
Power required, horsepower	2	2
Net weight, lb.	3,000	3,000
Shipping weight, lb.	3,500	3,800
Contents of case, cu. ft.	75	83

If desired a swinging table or a tilting table with or without worm movement can be supplied to order. In addition to the cone pulley drive from an overhead countershaft the machine can be furnished with motor drive or with a speed variator, the construction of which was described in *The Iron Age* March 10, 1904.

Plan to Restore Original Beauty of Niagara Falls

A daring engineering feat has been proposed by Senex Smith, an engineer of Washington, D. C. He recommends a surgical operation in Niagara Falls at the very point where the deluge hurls itself thickest.

For some years tourists have noticed in the Horseshoe Falls a great V-shaped notch, 20 or more ft. deep and from 70 to 80 ft. across from leg to leg. Because the volume of water is greater here than at any other point, the notch looms up against a greenish white crest line like a huge dark green patch. Sentimental visitors have named this notch the "Great Green Heart." As a matter of fact, however, this is nothing but a virulent cancer that is threatening to ruin the Falls. The water at this point found a soft spot in the underlying rock and has eaten into it, gouging out a 20-ft. deep channel. The deeper the channel grows the more water flows into it from the shallower ends of the Falls, and the more the water is diverted into it the more relentlessly the channel deepens.

According to a report by United States army engineers, to be submitted when Congress convenes, the Horseshoe Falls are eating their way upstream at the rate of 5 ft. a year. The erosion is still greater in the V-shaped notch that now threatens to turn the entire Falls into a mere narrow gorge whirlpool. Mr. Smith's plan, which is announced by the Scientific American, is for the State of New York and the Province of Ontario to erect a temporary dam in the rapids at the very head of the Horseshoe, so as to deflect the Niagara River over the Canadian end of the falls. When the rock under the "Great Green Heart" had been thus laid bare the ugly notch would be filled in and built up with concrete and Portland cement to the proper level. After this a vanadium steel sill would be laid along the entire ledge of the precipice. This would prevent the water from eating into the rocks for centuries to come, and would restore to the Falls their original natural beauty.

The New Steel Plant at Duluth

Present Status of the Construction Work—Exceptional Facilities for Transportation Through Belt Line Connections

Work on the plant of the Minnesota Steel Company, a subsidy of the United States Steel Corporation, is progressing satisfactorily at Duluth. A number of buildings are completed and several others are well along. The plans call for some 50 buildings. Foundations for nearly all of the larger ones are well toward completion. Exclusive of land purchases and of construction and right of way, etc., for the transfer railroad, there has been expended thus far about $1,750,000. Lands, railroad construction by the company and all other outlays will bring the expenditures to this time to very nearly $6,000,000.

The site is within and near the southerly end of the city of Duluth, along the St. Louis river, and upon the river the site has a frontage of two miles available for the larger type of freight vessels plying the great lakes. The location is bisected by a branch and bordered by a main line of the Northern Pacific Railway, the Canadian Northern passes on the hillside a few hundred feet away, while the Spirit Lake Transfer road, owned by the United States Steel Corporation, crosses the property and forms a belt line about the head of Lake Superior, connecting with every railroad system that comes to the cities of Duluth and Superior. Though this road is not yet completed, it now forms a junction with all the roads on the Minnesota side the river; it has a double deck, two-track steel girder bridge, nearly a mile long, across into Wisconsin, and also has some 25 miles of track in the city of Superior, Wis., with right of way 16 miles around that city to Wisconsin Point, where

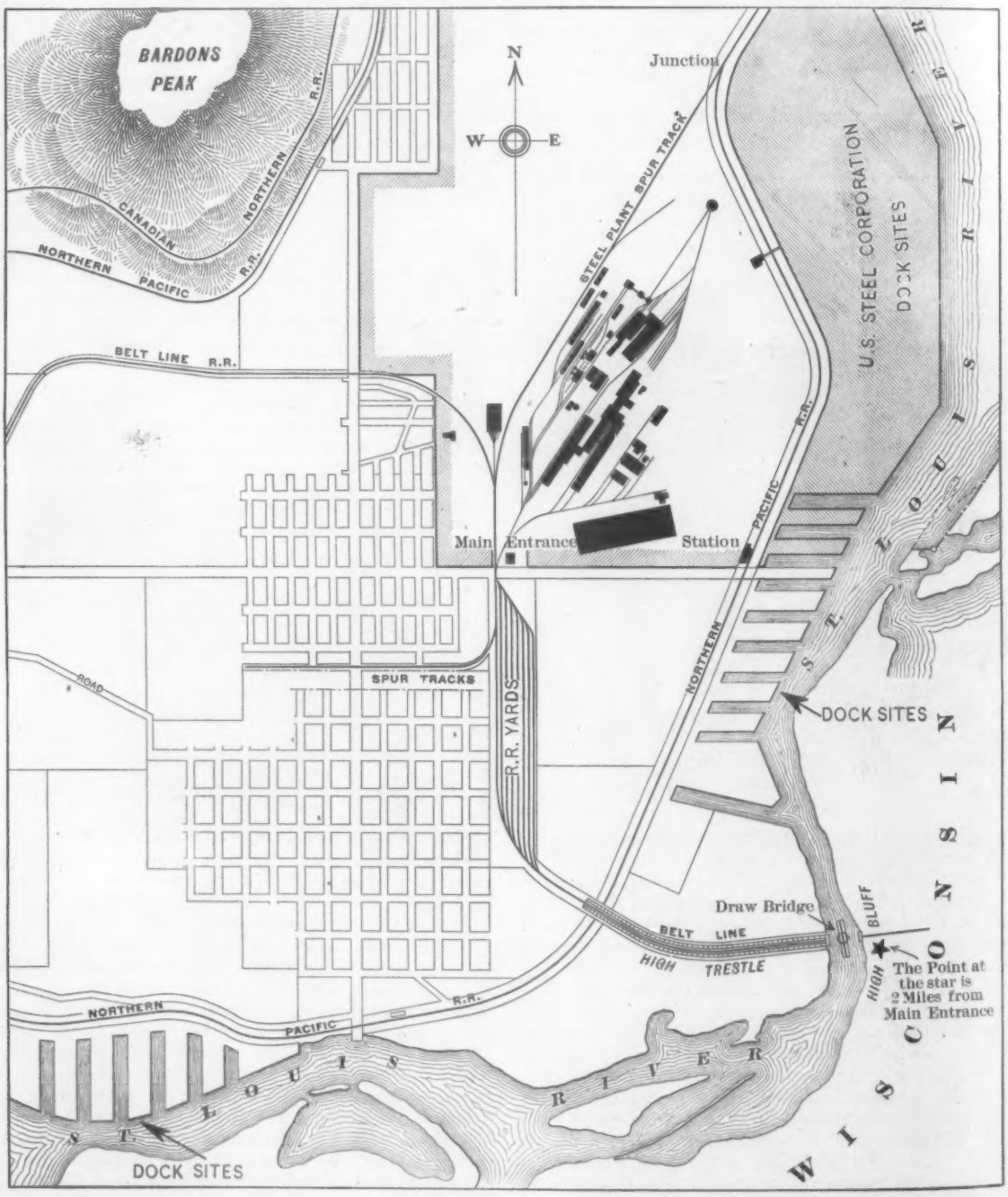


Fig. 1.—Map Showing the Location of the Minnesota Steel Company's Site, Its Railroad Connections and the Bridge Connecting with Superior, Wis.

ultimately there will be receiving docks for coal and supplies needed at the works.

The company controls about 2,000 acres of land well situated for its purposes, most of which is level and well drained and lies some 50 ft. above the datum of Lake Superior. The soil is clay, covering strata of sand and gravel many feet deep. Both gravel and sand used in foundations, concrete blocks, brick, etc., for these works have been dug from the excavations made for the buildings themselves.

The Plant Contemplated

The works will include two blast furnaces of 400 to 500 tons daily capacity each; 90 Koppers byproduct coke ovens of capacity to furnish all coke needed in the furnaces; seven open hearth furnaces of a rated capacity of 75 tons each; four 4-hole soaking pits; two continuous reheating

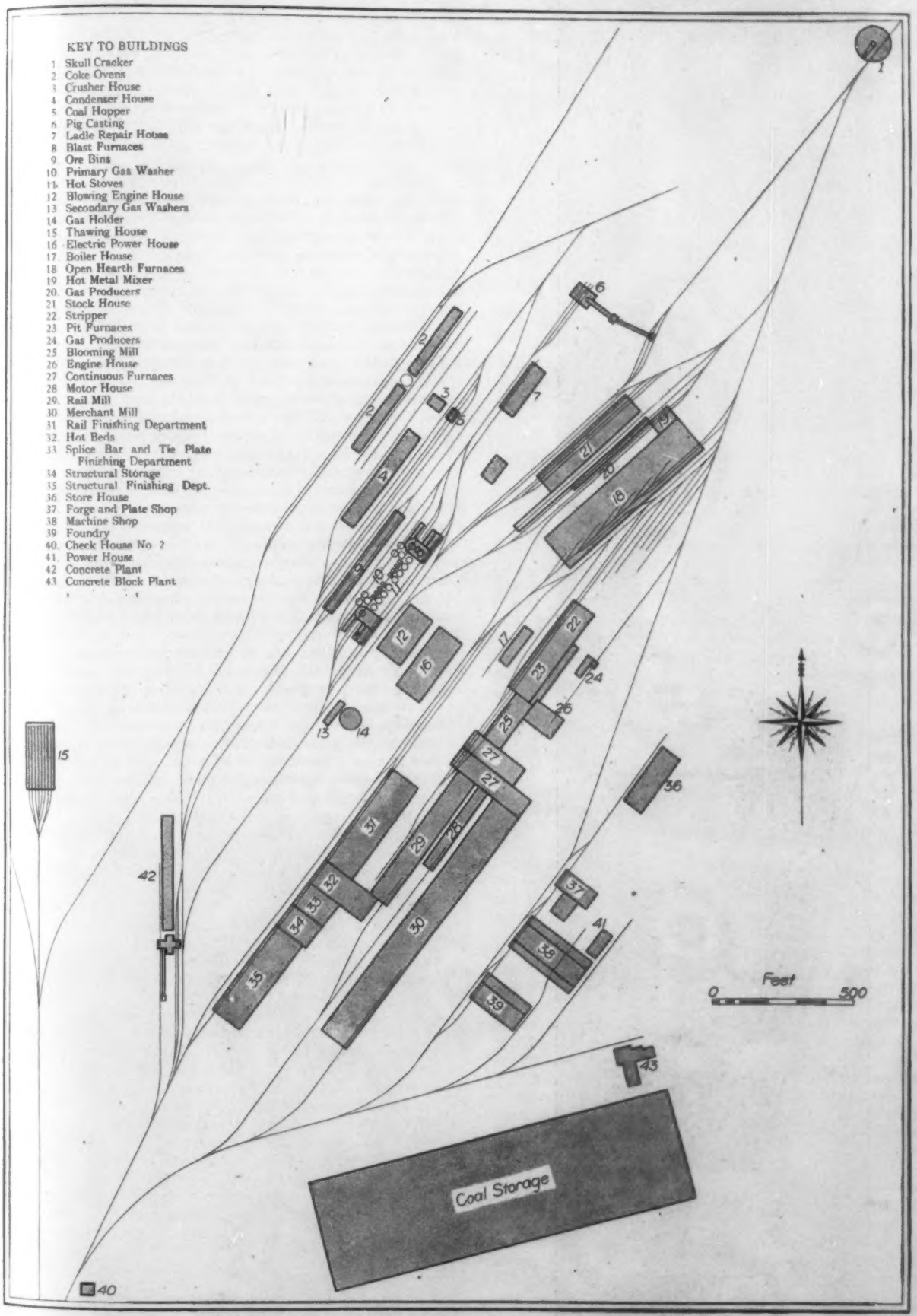


Fig. 2.—Arrangement of Buildings of the Minnesota Steel Company's Plant.

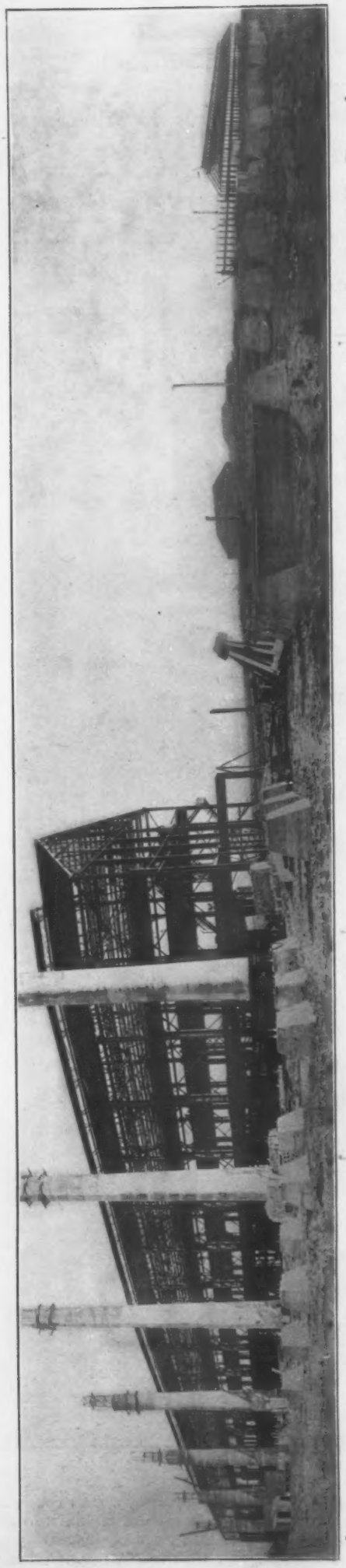


Fig. 3.—View Taken Early in November, Showing Progress of Work. Open Hearth Building and Blooming Mill Foundations in Foreground. Merchant Mill at Right, with Machine Shop, Forge, Foundry and Power House in Background.

furnaces of the regenerative type with end discharge and designed to take 16-ft. billets; one 40-in. reversing blooming mill; one 28-in. finishing mill; one 16-in. continuous roughing train with three stands of 12-in., two stands of 10-in. and two stands of 8-in. finishing rolls. The products will be rails, shapes and merchant steel to an estimated amount of 1,000 tons a day. The power plant will include a total capacity of 10,000 kw. The blowing engines will be 4 driven by gas from the coke ovens, and will have a capacity of 40,000 cu. ft. of free air per minute. The pumping station will have 30,000,000 gal. daily capacity. There will be machine, forge and structural shops. The layout is shown in Figs. 1 and 2.

Status of Construction Work

The buildings now completed include a concrete power house, 100 x 40 ft., containing 800 hp. of boilers and engine and 500 kw generator, and a concrete stack 6 x 165 ft.; a concrete block storage building 300 x 40 ft.; a central gravel screening and mixing plant, of 500 yd. capacity per 10 hours; a concrete block works of capacity for 4,000 blocks per 10 hours; a hospital; a garage for an automobile ambulance; a machine shop 280 x 140 ft. with floor space of 56,000 sq. ft., and covered by a traveling crane; plate shop, 140 x 80 ft.; forge shop, 140 x 65 ft. Buildings well on toward completion as shown in Fig. 3, include an open hearth building and the connected stockhouse, gas producers and hot metal mixer. The open hearth building is 648 ft. long. Also under way are the coke ovens, ore bins, crusher house, etc., and the blast furnaces and stoves. The merchant mill, 1040 ft. long, is in frame, and its concrete block walls are partly completed. Foundations for the pit furnaces, blooming mill and continuous mills are in, as are those for the rail mill. This latter is to be 540 ft. long and is in direct line with the blooming mill and continuous mills, and, on the other end, with the structural finishing department and structural storage, making a continuous structure 1960 ft. long. Something like 200,000 cu. yd. of earthwork has been done, and 70,000 yd. of concrete foundations are laid. Between 6000 and 700 ft. of sewer, some of it 80 in. in diameter, has been put at various depths, to as much as 30 ft. underground. There are 10 miles of standard gauge railroad track in the grounds, 12 miles of power line and two miles of large water mains. Some 500,000 concrete building blocks have been made, and most of these have been set into construction. Some 6,500 tons of structural steel has been delivered, of which more than half has been erected by the American Bridge Company. All buildings are of steel frame work with concrete block walls.

Ore will come in over the Spirit Lake Transfer Railroad tracks, and will be brought direct to the blast furnace stockhouse or, in winter, it will go first into a thawing house.

In the planning of these works advantage has been taken of experience gained at Gary and elsewhere, and it is believed the result will be the most modern and economical in operation of any steel works yet built. The statement has been published that steel is to be made in electric furnaces, but there is no plan at present for the employment of electric refining. Power for the entire works will be electric, generated by gas engines that will utilize by product gases produced in the works. The power plant will be one of the most notable gas-driven installations to be found.

It is expected that a number of works under control of the United States Steel Corporation, for which the finished products of this mill will be raw material, will be grouped about the Minnesota Steel Company in time. It is for the purpose of locating these that the company has acquired a solid block of lands far in excess of its own requirements; indeed, the present works will use not to exceed 20 per cent of the lands purchased. The first dependent plant will be that of the Universal Portland Cement Company, which will begin the construction of a mill soon after the new year, that is to have capacity for 1,250,000 bbl. of cement per annum.

J. H. Williams & Co., manufacturers of drop forgings, Brooklyn, N. Y., confirm the report that they have purchased a site in Buffalo on which they hope to start to erect a plant some time next year and move, perhaps, within three years. As several points remain to be settled before a definite decision can be reached, the removal is not yet considered a certainty.

Automatic Motor Controllers

The Electric Controller & Mfg. Company, Cleveland, Ohio, has recently placed on the market a line of automatic controllers designed for the specific purpose of securing great convenience in the control of motor-driven machinery. The special advantages claimed for these controllers are the limiting of the accelerating and decelerating currents to a safe value, accelerating and decelerating the motor in the shortest safe time, varying the time of motor acceleration and deceleration according to the load upon the motor, eliminating the use of mechanical clutches on motor-driven tools, providing a means for stopping the motor quickly in case of accident and the securing of an inherent automatic no-voltage protection. Two views of machine tools equipped with this controller are given, Fig. 1 showing the device applied to a punch press with the controller mounted near the machine while in Fig. 2, a shaper, is illustrated with the controller lever mounted on the top of the tool.

The controller consists of a small operator's switch and an accelerating unit which is built in four different forms. These units were illustrated in *The Iron Age* April 6, 1911. Three types of controller are built to secure either non-reversing and dynamic braking, reversing without dynamic braking or reversing and dynamic braking. In each type a variety of four different forms of accelerating units are offered which vary in design from a simple train of accelerating switches to a unit having a fuse protected service switch, a train of accelerating switches and complete circuit breaker features. The accelerating unit automatically increases or decreases the speed of the motor through the action of series wound accelerating switches possessing the property of acting both as switches and current limiting relays as well. When the current flowing in the winding of one of these switches exceeds a certain predetermined value the switch locks open and cannot be closed until the current is reduced to the proper value.

When the operator's switch is thrown to the running position current flows through the motor, all of the starting resistance and the coil of the first series wound accelerating switch. As the motor accelerates the current decreases and when it reaches the proper value the first switch closes and cuts out a portion of the starting resistance. The operation of the succeeding accelerating switches is similar and when the last of the train closes all of the starting resistance has been cut out of the circuit and the motor is directly across the line. When the operator's switch is returned to its original position the motor circuit is opened and the motor gradually comes to a stop. Different positions of the handle in the various types provide for drifting, reversing or rapid stopping by dynamic braking.

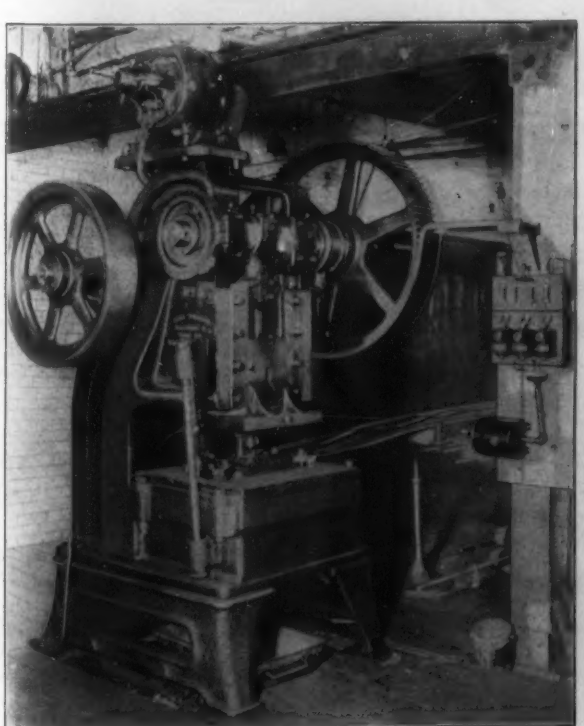


Fig. 1.—A Punch Press Equipped with a New Type of Automatic Controller Built by the Electric Controller & Mfg. Company, Cleveland, Ohio.

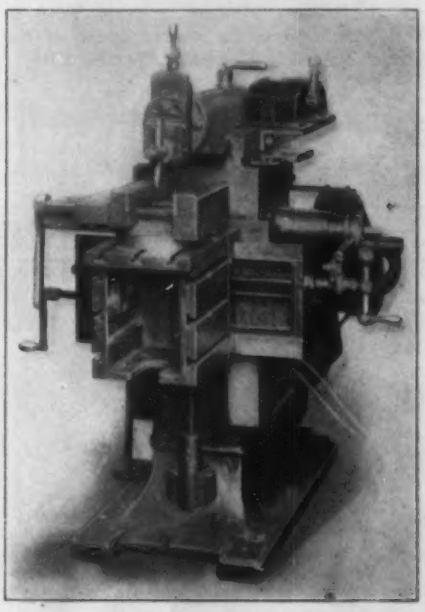


Fig. 2.—One of the Controllers Applied to a Shaper.

This last condition is secured by a change of connections produced by the movement of the operator's switch. This first inserts all the starting resistance in series with the motor armature and the motor is then quickly and evenly brought to rest by automatic dynamic braking. In this case the accelerating switches act as decelerating switches and cut out the resistance, step by step, as the current produced by the motor which is operating as a generator due to the change in its connections decreases as the motor slows down.

The Reading-Bayonne Steel Casting Company.—On December 1 the Reading Steel Casting Company, with works at Reading, Pa., and the Bayonne Steel Casting Company, with works at Bayonne, N. J., will be consolidated under the name of the Reading-Bayonne Steel Casting Company. The officers of the new company will be as follows: William D. Sargent, chairman of the board of directors; J. Turner Moore, president; A. E. Williamson, vice-president, and D. W. Yeckley, secretary and treasurer. All have been engaged in the steel casting industry for many years. The new company has an authorized capital stock of $750,000. This increase in capital over the combined capital of the two old companies has been made necessary by the steady enlargement of the business. The combined capacity of the two plants is 800 to 1000 tons per month. Located as they are, one in the Schuylkill Valley and the other in the Greater New York district, they are prepared to serve a large circle of customers. Both companies have large, thoroughly equipped plants for the manufacture of medium and light weight Tropenas steel castings. The Reading Steel Casting Company has been in the business for five years and a half and the Bayonne Steel Casting Company is entering upon its second year.

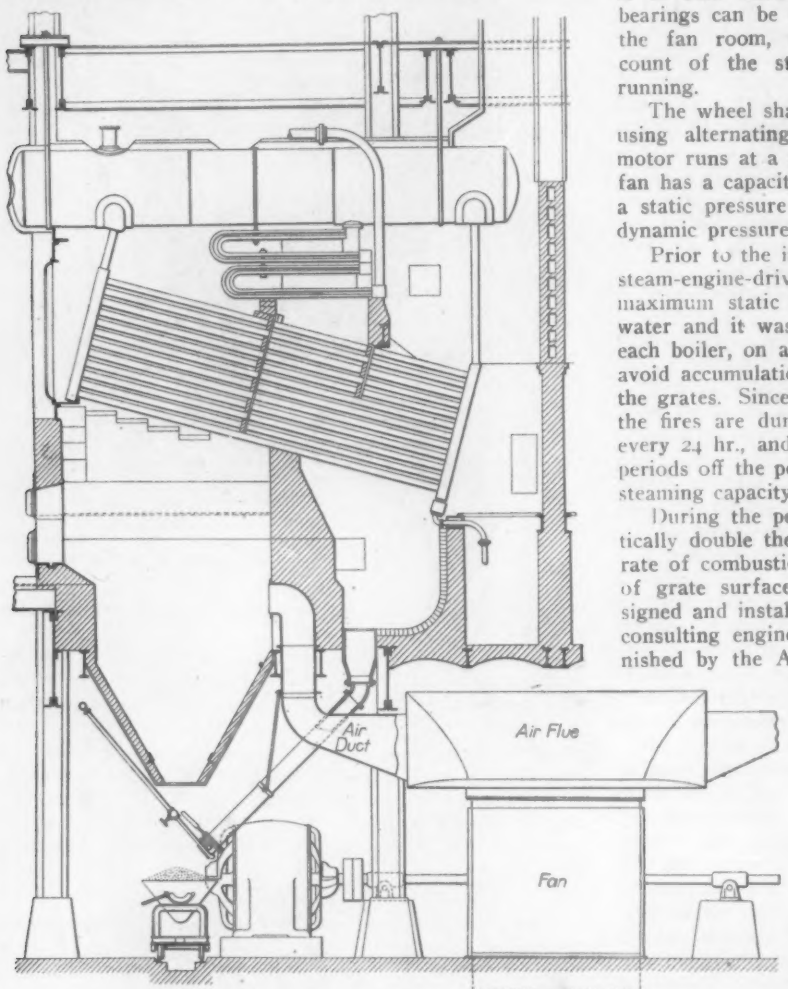
Germany's iron and steel exports in October amounted to 489,800 metric tons, against 426,000 tons in October, 1910; and for ten months the outgo was 4,388,000 tons against 4,002,000 tons. In October the exports of semi-rolled steel reached 45,480 tons, against 40,800 tons in October, 1910; beams 44,000 tons, against 30,000 tons, and steel rails, 40,700 tons, against 54,600 tons.

The Marting Iron & Steel Company, Ironton, Ohio, which blew out one of its alternate blast furnaces November 8, because of the falling in of the inwall, is now relining the other stack and expects to have it in blast by the latter part of the year.

A 500-hp. Forced Blast Unit

BY CHARLES H. HUGHES, NEW YORK.

One of the largest blowers in New York or vicinity was recently installed in the power house of the Hudson & Manhattan Railroad Company, Jersey City, N. J. In addition to its size it is interesting on account of the exceptional pressure, about 5 in., obtained, which permits of the use, with good results, of No. 3 anthracite buckwheat coal.



Forced Draft Sirocco Fan for 7200 hp. of Steam Boilers.

The present equipment of this station includes two 3000-kw. and two 6000-kw. General Electric turbo generators of the vertical shaft type, steam for which is supplied by eight 900-hp. Babcock & Wilcox boilers, each having 9000 sq. ft. of heating surface, four drums and superheaters. The boilers are in rows of four, back to back, and above each boiler is an economizer, four of which lead to two uptakes, in turn connected with a single steel stack 11 ft. in diameter and 180 ft. high above the street.

With a boiler equipment having a normal rating of only 7200 hp. and a turbine installation of 18,000 kw. it is evident that the latter is in excess of the former. Although the ultimate installation will be sixteen 900 hp. boilers, the present ones are worked to more than their normal rating to supply sufficient steam. This is accomplished by means of a forced draft system, with a fan delivering air at a static pressure of nearly 5 in. of water and practically doubling the boiler rating.

The arrangement of the forced draft system is shown in the accompanying drawing. In the basement of the station below the boilers a double-inlet double-width Sirocco fan is installed. The fan with its casing is completely inclosed by a wall of hollow terra cotta tile and the room thus formed has three windows through which air is taken and two doors. The fan wheel is of the double inlet type 72 in. wide by 72 in. in diameter, and is fastened to a tapered steel shaft 16 ft. long in diameter at the center and 6 in. at the bearings. The increased diameter at the center secures rigidity. The bearings are lined with a special babbitt metal, are self-aligning and are fitted with oil rings. The shaft on which the wheel is mounted is supported on bearings outside of the fan room, while the driving motor is in still another room. With this arrangement the bearings can be oiled when necessary without going into the fan room, which is an important feature on account of the strong suction created when the fan is running.

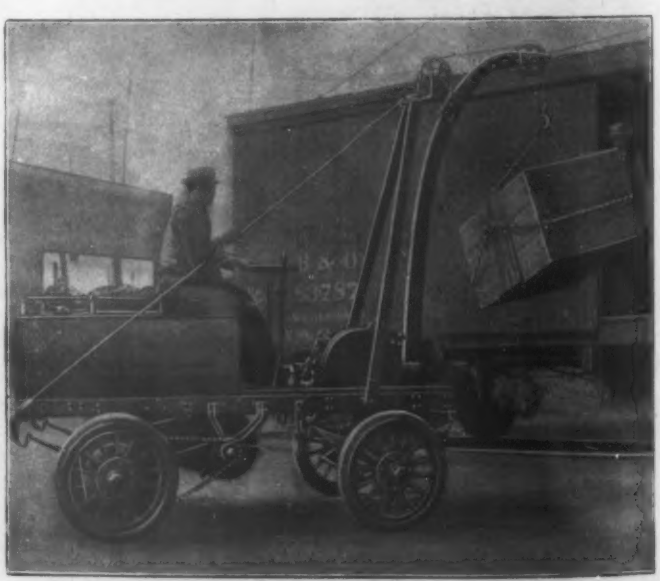
The wheel shaft is coupled to a 500-hp. electric motor using alternating current of 25 cycles, 430 volts. The motor runs at a speed of 480 r.p.m. and at this speed the fan has a capacity of 209,000 cu. ft. per minute and gives a static pressure of 4.9 or nearly 5 in. of water, and a dynamic pressure of 7.5 in.

Prior to the installation of the Sirocco fan, when four steam-engine-driven fans were supplying the air, the maximum static pressure obtainable was about 2 in. of water and it was found necessary to dump the fires for each boiler, on an average, four times in every 24 hr. to avoid accumulation of too deep a bed of ashes on top of the grates. Since the installation of the motor-driven fan, the fires are dumped on an average only three times in every 24 hr., and these operations are now carried on at periods off the peak loads when the temporary loss of the steaming capacity of one boiler is of no consequence.

During the peak loads the boilers are forced to practically double their normal rating, and at these times the rate of combustion exceeds 30 lb. of coal per square foot of grate surface. The forced draft equipment was designed and installed under the direction of L. B. Stillwell, consulting engineer, New York City. The fan was furnished by the American Blower Company, and the duct work by subcontractors for the Hudson & Manhattan Railroad Company.

A Battery Truck Crane

A device for handling with expedition and at a low cost freight and materials, loose or in packages, which have to be lifted and moved through moderate distances, has been developed by the General Electric Company, Schenectady, N. Y. It has been given the name of the battery truck crane, an electric vehicle which has a swinging crane mounted on the front end. The crane's hook is raised and lowered by a 1-ton hoist mounted on the front end just back of the crane. The motors driving the hoist and the vehicle are operated from a battery mounted on the rear end, as indicated in the illustration.



One of the Uses of the Battery Truck Crane.

The time, money and step saving applications of this crane are classed under three heads: hoisting, hoisting and

carrying on the hook and towing trailers. In case material, which may be subdivided into parcels of 1 ton or less, has to be deposited within a 6 or 8-ft. radius and this action does not require that the parcel be moved through a vertical distance of over 10 ft., the machine is brought into an advantageous position, the brakes are set, and the vehicle remains stationary as the boom of the crane moves back and forth between the picking up and depositing points. In this manner the battery truck crane may be employed to load or unload railroad cars, wagons, etc.

When material has to be moved less than 400 ft. or, in small quantities, to any distance, the article is lifted by the hook and conveyed to its destination by the vehicle. The short wheel base permits making short turns so the machine may be driven about shop aisles.

For the miscellaneous transfer of large quantities of package freight or other material through a distance of about 400 ft., the procedure is to use the truck crane to tow trailers in trains of about four. To secure the best results there should be a train loading and another unloading while the machine is on the road between to eliminate waiting.

Recorder with Frictionless Inking Device

On April 13, 1909, a patent was granted to William H. Bristol, president of the Bristol Company, Waterbury, Conn., covering a frictionless ink recorder using a hinged electrical movement carrying a receptacle containing the marking fluid. This instrument was brought out in response to a demand for a frictionless ink type of recording instrument to parallel the Bristol smoked chart recorder as closely as possible in simplicity of construction and to record accurately fractions of millivolts and to serve as a recording electric pyrometer. The original instrument has been tested out during the past two years and the new type of recorder which is illustrated herewith has been placed on the market. Some of its applications are for pyrometers, recording voltmeters, recording shunt ammeters and in electrolytic research work. Fig. 1 is an interior view showing the galvanometer movement case hinged to the back of the instrument and carrying the

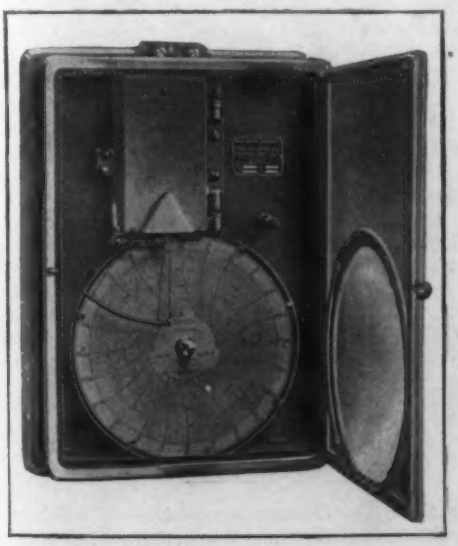


Fig. 1.—The New Frictionless Ink Recorder Made by the Bristol Company, Waterbury, Conn.

inking pad in front of the recording arm, while Fig. 2 shows the electrical movement swung to one side for convenience in removing the record and inserting a fresh chart.

In the original recorder the receptacle for the marking fluid extended over the recording tip and had means for making periodical contact with the supply of the marking fluid and the chart. In the latest style a capillary gold tube open at both ends is carried at right angles to the surface of the chart at the end of the recording arm. The inking pad is suspended from the case of the electrical movement and is curved to correspond with the arc described by the motion of the end of the recording arm. When the movement is swung back into its operating position as shown in Fig. 1 the recording arm can swing freely and accommodate itself to the position corresponding to the small amount of current measured. The clockwork which revolves the chart at any desired speed also automatically presses the inking pad toward the chart once in

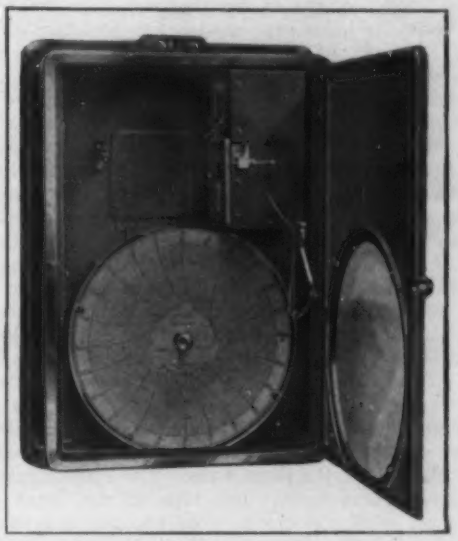


Fig. 2.—View Showing the Recording Attachment Swung to One Side to Permit the Insertion of a New Sheet.

10 sec., thus bringing one end of the capillary tube into contact with the chart and the opposite end simultaneously into contact with the inking pad. A fine dot of ink is left on the chart and the capillary tube is replenished from the pad. In this way the recording arm carries a constant supply of ink and maintains a perfect balance which it is emphasized is very important in an instrument of this nature. The electrical movements used in these recorders were especially made for this purpose by the Weston Electrical Instrument Company, Waverly Park, N. J.

The Worth Brothers Company's New Railroad

The Worth Brothers Company, Coatesville, Pa., which for several years past has been attempting to get its plant connected directly with the Pennsylvania Railroad system, has at last hit upon a plan that will bring the desired result. The main line of the Pennsylvania Railroad runs through Coatesville about a mile north of the plant, and until this time all the freight consigned to the Worth Brothers Company sent over the road had to be transferred to the Reading and run over a mile of its tracks to the plant. Natural conditions make it impossible to run a spur from the main line to the plant. A line has now been projected by the Worth Brothers Company running about three miles across country, where it will connect with a branch of the Pennsylvania Railroad about four miles from the main line. A part of the construction work on this new line is now well under way. The route crosses a valley about a half mile wide over which a steel bridge about 100 ft. high is being constructed. The opening up of the new line will give the company easy access to a number of limestone quarries along the branch road, which will supply flux for its blast furnaces.

The Steel Company of Canada has under preparation plans for building new works in Hamilton, Ont., that will cost $2,000,000. The works are to include a rod mill, a blooming mill, a billet mill, and two 60-ton open-hearth furnaces. The order for the plans has been given to one of the largest engineering firms in the United States, and it is expected that tenders will be called for as soon as the plans are prepared. It is said that the government's action is expected to be favorable in respect to the application for a bounty on pig iron and in the matter of a duty on wire rods. If it were not so expected the company might not carry out the plans in exactly the manner indicated.

New Silver Drills

A new line of post drills, including both power and hand driven drills has been recently placed on the market by the Silver Mfg. Company, Salem, Ohio. These tools have ball bearings and are equipped with intermediate gears. Figs. 1 and 2 show two of the new drills, the former being designated by the maker as its self-feed drill, while the latter is a hand-power tool for light drilling of all kinds. The ball bearing feed nut used is illustrated in Fig. 3.

The first tool is designed for both fast and slow speeds and is made in three sizes, each size being made in two types, one for hand power and the other for either hand or belt power. The smallest size is designed for light and medium work and the largest for the heaviest hand drilling, the capacity being 1¼ in. for the smallest tool and 1½ in. for the other two. The spindles are bored for ½-in. shank drills. An automatic feeding device located back of the spindle is operated by a cam inside of the gear wheel, thus giving a practically continuous feed which is increased or diminished by turning a thumb screw. These tools will drill to the centers of 15, 18 and 22 in. circles, the greatest distance from the spindle to the table being 13, 16 and 18 in. respectively. The spindle in the smallest drill is 1 in. in diameter, and in the other two the diameter is ⅛ in. greater, the traverse being 3¾, 4 and 4¼ in. for the three sizes. The spindle makes one and one-half revolutions per turn of the crank on the fast speed, while the crank turns one and one-half times for each revolution of the spindle on the slow speed. The tight and loose pulleys on the belt power tools are 8 in. in diameter and 2½ in. wide. They are intended to operate at a speed of approximately 250 r. p. m., which gives a spindle speed of 170 r. p. m.

The balls in the ball bearing feed nut shown in Fig. 3 take the spindle thrust without wear or lost motion and it is claimed that they reduce the friction at this point to a minimum and save from 20 to 50 per cent. in the amount of power consumed. The balls are protected from dust and dirt and are carried in disks or cups of case hardened steel. The intermediate gear wheel does away with the necessity of reversing the crank on the slow speed. In Fig. 1 the crank is shown in the slow speed position. The bearings of the drill are ground and machine molded gears are used to insure a perfect mesh. Steel is used for the spindle and the upright column and the frame is a one-piece casting. The hand power drills when crated weigh 115, 170 and 230 lb., while the combination hand and belt power tools are 15 lb. heavier. The hights of the three sizes of drill are 48, 50 and 54 in.

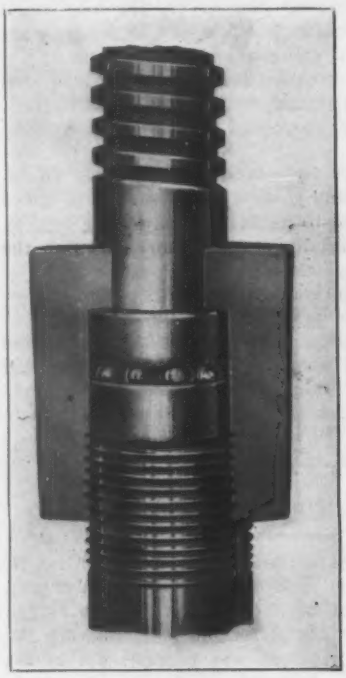


Fig. 3—The Ball Bearing Feed Nut Used on These Drills.

The hand power drill illustrated in Fig. 2 is very similar in design to the other and is intended for light drilling of all kinds. The drill has hand feed and also a continuous automatic feed worked by a cam on the inside of the main gear wheel and adjusted by a thumb screw in the same way as the tool illustrated in Fig. 1. Two speed changes are available and these are secured by moving the crank hub from one shaft to the other. The tool has a capacity of 1 in. and will drill to the center of a 12-in. circle. The greatest distance from the spindle to the table is 10 in. and the spindle traverse is 3 in. The ratio of spindle revolutions to turns of the crank is the same as in the other drills. The diameter of the column is 1⅜ in; the over-all hight, 38 in., and the crated weight 80 lb.

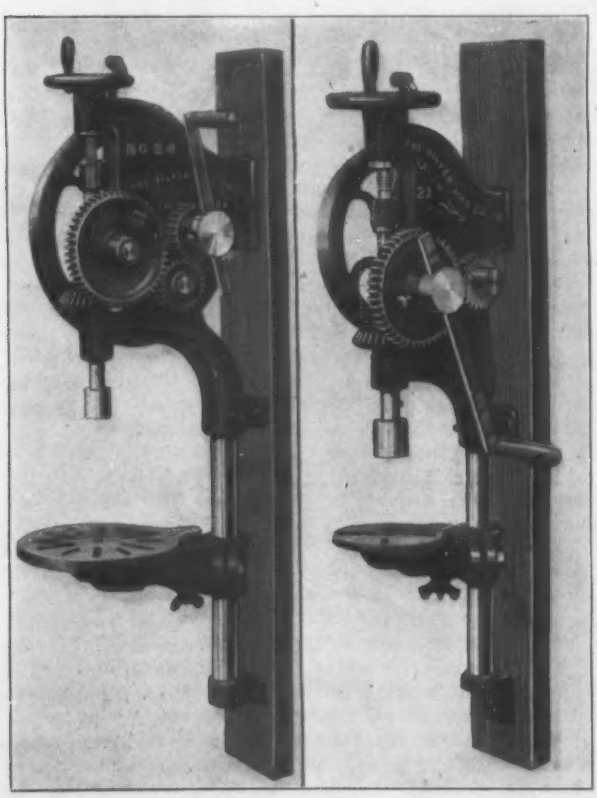


Fig. 1—A New Type of Ball Bearing Post Drill.

Fig. 2—The Hand Power Ball Bearing Drill.

Two New Types of Drills Made by the Silver Mfg. Company, Salem, Ohio.

The Enlarged M. Rumely Company

The M. Rumely Company, LaPorte, Ind., has increased its capital stock from $3,000,000 to $22,000,000 through reorganization and the merger with it of Gaar, Scott & Co., Inc., Richmond, Ind., and the Advance Thresher Company, Battle Creek, Mich. The three companies are manufacturers of threshing machinery. The capitalization is larger than that of any other manufacturing concern having its headquarters in Indiana and the consolidation makes the new company the third largest threshing machine company in the world. The capital stock is divided into $12,000,000 common and $10,000,000 preferred. The M. Rumely Company was established in 1853 with $250,000 capital; Gaar, Scott & Co. in 1836 and the Advance Thresher Company in 1885. The total assets of the new company are given by the appraisers at $21,281,306, of which current assets are $16,177,784. The three plants employ about 4000 men.

Why Ferromanganese Is Rising

The three big German establishments (Gelsenkirchen, Gutehoffnungs-Hütte, and Niederrheinische Hütte) that produce ferromanganese have effected an arrangement with English producers as to prices and markets, according to late advices from Berlin.

At the annual meeting of the Foundry & Machine Exhibition Company, held in Pittsburgh, recently, the recommendation of the directors, made at the Buffalo meeting, that a 20 per cent. dividend be paid to exhibitors at the Pittsburgh convention, was indorsed. This dividend will be paid to all exhibitors who participated in two consecutive shows and the dividend will be held in reserve for those who exhibited for the first time at the last convention, but will be paid to them in 1912 if they exhibit at Buffalo.

A New Crane Trolley

Compactness without complicated construction characterizes a new crane trolley with no overhanging gears that has been brought out by the Cleveland Crane & Engineering Company, Wickliffe, Ohio. Its general construction follows that of the other trolleys built by this company and it is pointed out that while throughout its entire design all the parts essential to perfect operation have been retained, at the same time only the fewest possible numbers of pieces are used. There are no loose bearing brackets on the trolley, all bearings being cast on the side frames and bushed with bronze. The trolley is designed for very heavy steel mill service and with that end in view cast iron has been employed for the drum only. Fig. 1 is a plan view of the new trolley, while Fig. 2 is an end elevation of the hoisting end.

The hoisting mechanism is composed of a large diameter cable winding drum, *a*, Fig. 1. The gear *b*, which is of wide face and large pitch, is keyed to the drum and meshes with the brake pinion *c*. This pinion runs on the intermediate shaft *d* which has the large motor gear *e* keyed to its opposite end. The motor pinion *f*, which is keyed directly to the motor armature, meshes with this gear. A heavy forged shaft running in a bronze bearing *g* on the upper side of the trolley frame supports the drum. The bearings for the intermediate shaft are also located on this side of the frame and together with those of the drum shaft are of the capped tongue and groove type, the cap being held in place by through bolts to the complete exclusion of studs, cotters or keys in the construction of these boxes. Both of these shafts are so located that either one of them can be removed without disturbing the other.

The driving mechanism of the trolley consists of a driving motor which transmits power to the wheels through two sets of gears and two shafts. One of these shafts is the long axle which extends across the trolley and to which the two driving wheels *k*, one on either side of the trolley, are keyed. Mounted on this axle also is the gear *l* which meshes with the pinion *m*. This pinion is keyed to the intermediate shaft *n*. The pinion *p* is keyed to the motor armature and meshes with a gear which is keyed to the intermediate shaft. The intermediate shaft bearings are of the same type as those used in the hoisting mechanism and are located in the end of the frame. The axle boxes *q*, Fig. 2, are of the M. C. B. type with oil waste collars and bronze half hexagonal boxes *r*. These parts are held

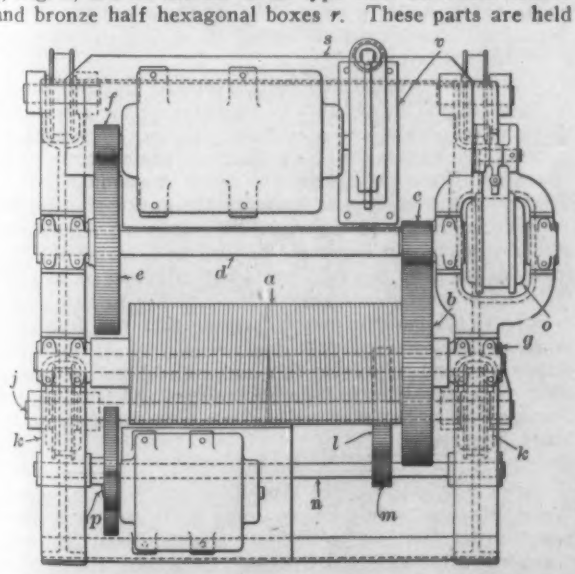


Fig. 1.—Plan View of a New Crane Trolley with No Overhanging Gears, Built by the Cleveland Crane & Engineering Company, Wickliffe, Ohio.

in place by through bolts and together with the shafts can be easily removed without disturbing any other part.

The two main frames are kept in alignment by a heavy structural tie piece, *s*, which is securely riveted to the frame casting. Its design is simple and it supports the top block *t* consisting of a straight pin on which are mounted the rope sheaves with bronze bushings pressed in and arranged to turn on the pin which is held rigidly in position. Both motors and the electric brake *v*, Fig. 1, are mounted directly on top of this tie piece which is so designed that any standard make of motor can be used. This arrangement is also very convenient for inspecting and repairing the motors. In addition to the electric brake there is also a mechanical brake *o* for stopping the travel of the trolley.

The lower block used in these trolleys is also of simple

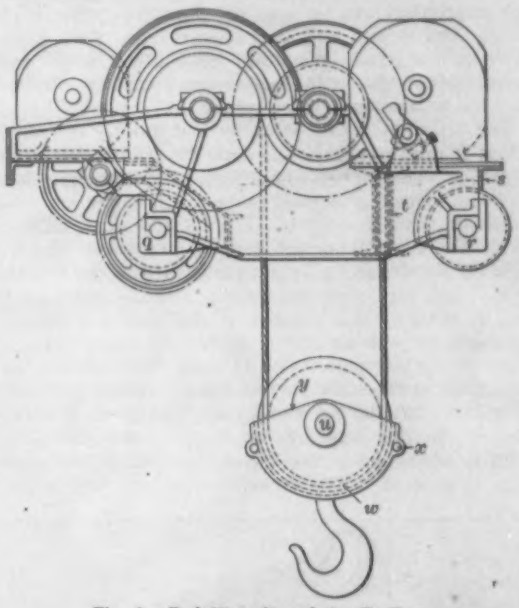


Fig. 2.—End Elevation of the Trolley.

construction and consists of a straight pin, *u*, Fig. 2, which carries the sheaves that are duplicates of those used in the upper block. These sheaves extend through the side plates *w* which are of heavy structural material and connect the pin with the cross head. They are also held in place by through bolts *x* having pipe separators. The cross head *y* is a simple forging with a large hole bored in the center which carries the neck of the hook and on top of which the ball bearings on which the hook turns are mounted. The ends of the cross head are turned with trunnion bearings which fit into the side plates, thus making a very small number of parts.

Three Notable Open-Hearth Furnaces

In September the Phoenix Iron Company of Phoenixville, Pa., completed the erection of an additional open-hearth furnace. The hearth of this furnace is 15 x 42 ft. and steel is tapped into two ladles simultaneously through a bifurcated spout equipped with controlling device, all of which is covered by patents owned by the company. The largest heat to date is 194½ net tons of ingots, the average heat being 185 tons. During the eight weeks the furnace has been in operation the weekly average has been 1352 net tons of ingots. This, it is believed, is the largest product that has ever been made by any furnace using all cold raw material and producer gas.

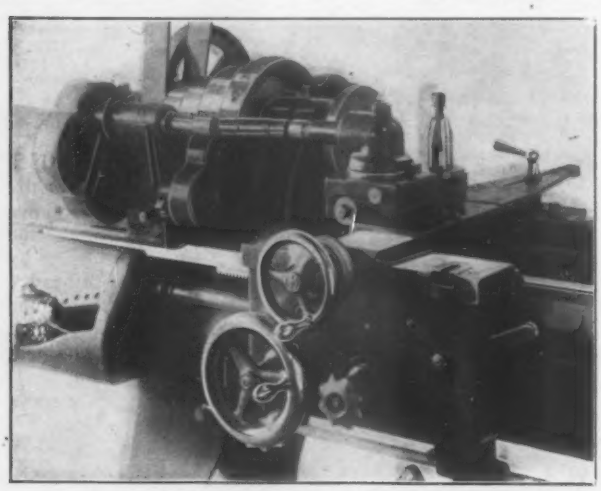
This makes the third furnace the company has making large heats tapping into two ladles. The first one started making steel in January, 1909, 14 x 32 ft. in hearth size, and averages per heat 140 net tons of ingots. The second furnace started making steel in October, 1909. The size of hearth is 14 x 36 ft., and the average heat is 156 net tons of ingots. An illustration of this furnace was given in *The Iron Age* of October 20, 1910.

W. J. Holliday & Co., Indianapolis, Ind., wholesale dealers in iron and steel, have purchased the Central Chair Company property on South Missouri street for $92,500. The lot is 171 x 420 ft., with a four-story brick factory building on it. The new owners will build a series of steel-constructed warehouses to accommodate their rapidly growing business. The first of these, 80 x 171 ft., will be begun at once. The plan endeavors to make it as modern as any building of its kind in the United States, with the purpose of handling stock as efficiently and economically as possible.

Seneca Falls Relieving Attachment

A new relieving or backing-off attachment has been recently brought out by the Seneca Falls Mfg. Company, 255 Water street, Seneca Falls, N. Y. It is intended for use with its 14 and 16 in. quick change tool room lathe, the former of which was illustrated in *The Iron Age* November 24, 1910. This attachment can be used in connection with the taper turning attachment and micrometer cross feed stop and also with the power cross and longitudinal feeds, and its use in conjunction with special cams enables elliptical or other irregular shapes to be turned.

The attachment can be easily and quickly disconnected so that it does not interfere with the regular operation of the lathe. The tool slide is removed by loosening a binding screw which is claimed to be much easier and quicker to operate than the regular T bolts and slots, pulling out the splined shaft from the driving mechanism and finally throwing the driving gear out of mesh with the head stock gear. The tool slide is attached to the carriage cross slide in place of the compound rest and will operate at any angle through an arc of 90 deg. on either side of the center of the carriage. The lower portion swivels on the cross slide in the same way as the compound rest and the upper part containing a pair of bevel gears in turn swivels upon it. In this way free working of the driving shaft which is connected to the driving mechanism by universal joints is secured. The stroke can be adjusted while the



A New Lathe Relieving Attachment Made by the Seneca Falls Mfg. Company, Seneca Falls, N. Y.

machine is in motion to give any desired amount of relief from 0 to ¼ in., the amount being indicated by graduations on the adjusting knob.

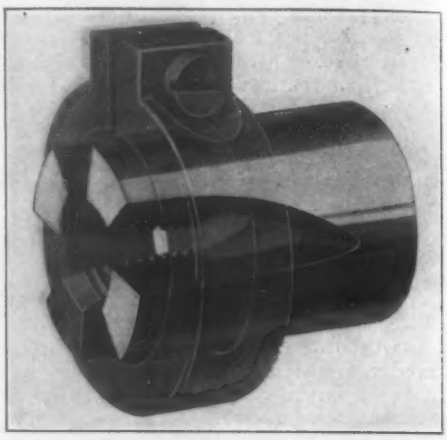
The driving mechanism is attached to the bed in front of the head stock and receives power from the head stock gear. The number of strokes per revolution of the work is governed by change gears, a set being furnished which provides 22 variations These gears give all numbers of strokes per revolution of the work from 2 to 16 and all even numbers from 18 to 30.

Suit has been filed in the United States Court at Chattanooga, Tenn., by the Trust Company of America, of New York, asking for a receiver for the Chattanooga Iron & Coal Company, a subsidiary of the Southern Steel & Iron Company, and seeking to foreclose a mortgage aggregating $600,000 and dated January 1, 1906. The Southern Iron & Steel Company of New Jersey and the Georgia Steel Company are also named as defendants, but merely to restrain them from proceeding against the property of the other defendant.

The Cincinnati Lathe & Tool Company, builder of engine lathes and machine tools, announces that it is now comfortably located in its new shops in Oakley, a suburb of Cincinnati, Ohio. The new shops have every facility for manufacturing Cincinnati lathes with the least time and labor costs, being up to date in all respects. The company's address is now Oakley, Cincinnati

An Improved Spring Die

For some time the National-Acme Mfg. Company, Cleveland, Ohio, has been making quantities of spring or prong dies for use in its screw machine products department and has built up a fully equipped department for their manufacture. Recently, however, the company has



A New Type of Spring Die Placed on the Market by the National-Acme Mfg. Company, Cleveland, Ohio.

decided to offer these dies to the trade in general and the improved spring die which is shown in the accompanying illustration is the result. This die is made in a number of styles and sizes. Those regularly carried in stock include the Society of Automobile Engineers (formerly the A. L. A. M. standard), the V. and the U. S. standard threads, while if desired dies of special pitches and shapes can be supplied to order.

Alabama's Governor Pleases Railroad Interests

The Railway Business Association, composed of manufacturers of equipment and supplies, held its annual business meeting and its third annual dinner at the Waldorf-Astoria, New York, on the evening of November 21. The following officers were elected for the coming year: President, George A. Post; vice-presidents, H. H. Westinghouse, O. H. A. M. Kittredge, W. E. Clow and George W. Simmons; treasurer, Charles A. Moore; assistant treasurer, M. S. Clayton.

The dinner was labeled the "Prosperity Special" on the menu card, and in addition to members of the association there were present 40 presidents and vice-presidents of railroads, 23 presidents of chambers of commerce in many states, and Governor Emmet O'Neal of Alabama. The address of the evening was made by the governor. He has pronounced views on the right of a state to regulate its own commerce, but expressed himself as favoring the railroads so far as to carefully avoid any crippling of such enterprises or any impairment of their ability to earn a fair return on the capital invested, saying that the South has much to thank the railroads for, needs more of them, and does not intend to prevent fair and even liberal returns on their property. How to improve business and what legislation may do to business received much attention from the other speakers.

After a strenuous fight Mrs. Elizabeth Seaman, who as Nellie Bly was widely known some years ago as a newspaper writer, has lost her fight to save the Iron Clad Mfg. Company, of which she is the head, from being declared insolvent. By direction of the court a jury in the United States District Court in Brooklyn, N. Y., November 23, found that the company was bankrupt and that a referee should be appointed to ascertain the amount of the assets and liabilities of the company and settle its affairs.

Katchen & Rabinowitz, structural and ornamental iron work, have moved from 78 Seventh avenue, Newark, N. J., to their own building, 201 Norfolk street, in that city. They have provided for themselves much larger quarters and better facilities for making fire escapes and all ornamental iron work.

The Machinery Markets

From nearly all machinery centers the reports are of a generally healthful tone in the trade. It is believed that the next 60 days will not only see a continuation of the present trend of business in machine tools, but that railroad requirements, noteworthy for their size, will be made known. This business, it is admitted, may not be in evidence until after the holidays. New York dealers pronounce the general volume of business in small lots as good. Prospective railroad requirements are being keenly anticipated in New York. The Delaware & Hudson and New York Central are regarded as probable buyers whose lists will touch large figures. Philadelphia has done a fair volume of fresh business and, like other centers, reports that railroad equipment buying is expected to help the trade. New England shops are busy. In Chicago activity continues. Good sales have been made. The railroads have taken single tools and a $10,000 inquiry is being figured on by Chicago dealers. Detroit has had several inquiries for machine tools and the second-hand trade has been active. Orders for three or four tools have predominated in Cleveland. Cincinnati says business is improving and there is a demand for skilled labor. The South is busy, and St. Louis reports that factory construction in that city means more business. Texas shares in the generally favorable report. Exports have shown no backward tendency.

New York

NEW YORK, November 29, 1911.

The aggregate amount of business in the New York machinery market is pronounced good by most sellers, despite the absence of any new lists or large orders which run into large amounts. The total volume of small orders is a cause of satisfaction. There has been little change during the week, although the feeling of encouragement has increased somewhat. Of some large machine tool builders in the East it is said they have no cause for complaint. Developments in the next 60 days in the machinery trade are expected to give an impulse of activity to dealers and makers. The opinion is growing that good business is to come from the railroads in the near future. Prospective lists from the Delaware & Hudson and the New York Central are among those intimated in the trade. Dealers in hoisting and conveying machinery express themselves as pleased with the amount of business they have in hand, a considerable portion of which will run into next year.

The improvements contemplated by the Titan Steel Castings Company, Newark, N. J., which have been held in abeyance, are to be begun at an early date and pushed to completion. They include an addition 200 x 200 ft. to the plant of the company in Newark.

Paul G. Mehlin & Sons, piano manufacturers, 27 Union Square, New York, have had plans prepared by Balch & Beardsley, 38 West Thirty-second street, for a new plant to be erected at West New York, N. J. The plans call for a main building, three stories, 63 x 225 ft., with an L, 63 x 126 ft., and a power plant, 35 x 70 ft., all of reinforced concrete construction. The equipment now at their works at 549 West Fifty-fourth street will be moved, but much new wood-working machinery will be required.

Contracts will be let in about three weeks for the new plant of the C. F. Mueller Company, manufacturer of macaroni, which is to be erected at Westside avenue and Boyd street, Jersey City, N. J. The plans provide for a main building, 65 x 150 ft., five stories, and a separate power plant. The machinery requirements include macaroni making machinery, conveyors of a light type, heating and ventilating equipment of a special design and a complete steam power plant. Balch & Beardsley, 38 West Thirty-second street, New York, are the architects in charge.

The American Musical Supply Company, 20 Morris street, Jersey City, N. J., has had plans prepared for a factory building to be erected at Woodward street, adjoining the Morris Canal. The new building will be 75 x 125 ft., three stories, of brick and mill construction, the estimated cost of which is $30,000. The company will move its equipment from its present plant, but much special machinery for the manufacture of piano-tuning pins, together with boilers and engine, will be required.

The Torbensen Gear & Axle Company, Bloomfield, N. J., has been incorporated with $120,000 capital stock to manufacture rear axles for motor trucks. The company will not install a plant at present, but will have its product manufactured by contract.

Kraeuter & Co., Newark, N. J., manufacturers of mechanics' tools, has had plans prepared for a four-story reinforced concrete addition, 60 x 75 ft., to be erected at Sixteenth street and Eighteenth avenue, that city. The estimated cost of the structure is $40,000. Equipment details are not as yet available.

The Universal Fibre Board Company, Rochester, N. Y., contemplates the erection of a plant with an area of 20,000 sq. ft. at Middleport, N. Y.

The James Thompson Steel Construction Company, Buffalo, N. Y., has been incorporated by James and C. Thompson and Edward Mayer. About the first of the year the company expects to establish a small fabricating plant. Temporarily the company's office will be at 318 Norwood avenue.

Plans are being prepared for the immediate rebuilding of the plant of the A. L. Swett Iron Works Company on Glenwood avenue, Medina, N. Y., which was partially destroyed by fire November 24, with a loss of $30,000, the larger portion of the loss being confined to the foundry and pattern shop.

The Rochester, Syracuse & Eastern Railroad Company will build a new power house north of its present location, at Lyons, N. Y., at an estimated cost of about $40,000. The new building is rendered necessary owing to changed location of the Erie Barge Canal.

The Bolton Light, Heat & Power Company, Bolton Landing, N. Y., contemplates extensions to its plant and system and has been authorized by the Public Service Commission to issue $12,000 in bonds for the purpose.

The city of Binghamton, N. Y., has voted to issue bonds to the amount of $158,200 for the construction of a municipal lighting plant, with necessary generating equipment.

C. C. Kellogg & Sons, Utica, N. Y., have let contracts for the construction of a two-story lumber mill and woodworking plant, 64 x 188 ft., of reinforced concrete.

New England

BOSTON, MASS., November 28, 1911.

The situation in the machinery market changes but little. No new business of particular moment is reported, but scattering orders relieve the monotony. Opinions differ broady regarding causes of the existing dullness and also as to the outlook, the leaven of those who believe in better times ahead being on the increase.

Harry G. Stoddard, president of the Trenton Wire Company, Trenton, N. J., has become associated with the Wyman & Gordon Company, Worcester, Mass., manufacturer of drop forgings. Mr. Stoddard will be a director of the corporation and will hold an office in the management, but this detail has not been determined. He will pay special attention to the sales end of the business. The company has grown very rapidly in the volume of its product in recent years and Mr. Stoddard will divide the details of management with Lyman F. Gordon, the president and treasurer, and George F. Fuller, the secretary and superintendent. Mr. Stoddard has been president of the Trenton Iron Company, a subsidiary of the United States Steel Corporation, for seven years and previously was manager of the Worcester Works of the American Steel & Wire Company.

The contract has been awarded for the new building of the Lamson Consolidated Store Service Company, Lowell, Mass. The structure will be 50 x 150 ft., four stories.

The United States Metal Screen Company, Norwalk, Conn., will manufacture a metal screen, the in-

vention of F. S. Banks, Wilton, Conn. Quarters have been taken in the Joseph Loth Company's building on Grand street.

The Ames Plow Company, Boston, Mass., has nearly completed its new works at South Framingham, Mass., and will remove the entire business from Worcester, where the works have been located for many years.

The Fox Gun Company, Philadelphia, is considering removing its business to Fitchburg, Mass. The change is subject to the placing of a bond issue of $100,000 in Fitchburg, and it is stated that this part of the transaction has been completed.

Joseph A. Serre, Danbury, Conn., has acquired the property of the Danbury & Harlem electric railway, and proposes to complete the line. The road is built from Danbury to Peach Lake, N. Y., and the power house has been equipped for five years, but no cars have ever been operated.

The American Steel & Wire Company will erect an addition to its New Haven works, 40 by 40 ft.

The New York, New Haven & Hartford Railroad will begin work immediately upon the new machine shop, which will be part of the new round house installation at Cedar Hills, a suburb of New Haven, Conn. The building will be 76 x 250 ft., one and two stories. A store house and office building will be 46 x 151 ft., two stories. The company has been making inquiries as to the equipment of the shop for some weeks.

The New Haven Boiler Works, New Haven, Conn., states that it has purchased the equipment of the addition to its plant, the contract for which has been let. The building will be 48 x 136 ft., one story.

The works of the Fore River Shipbuilding Company, Quincy, Mass., are actively busy. Two submarines for the United States, the Haddock and Chiclot, will be laid down immediately, and two others of the same type are well under way.

The Ready Tool Company, Bridgeport, Conn., manufacturer of small tools, will soon move into more commodious quarters. The company announces that it has become the owner and manufacturer of the M. B. Hill Mfg. Company's machine dogs, which had been made in Worcester, Mass.

J. L. Lucas & Son, 3 Fox street, Bridgeport, Conn., have brought out the Gas Saver brazing forge, which is intended primarily for automobile, factory and garage work. It burns either illuminating or fuel gas, and requires at least 3 lbs. of air pressure. It is built either right or left handed, with single or double torches.

Negotiations have fallen through for the purchase of the shipyard of Robert Palmer & Sons, Noank, Conn., to the Morris Heights Ship & Engine Company, Morris Heights, N. Y., which company has outgrown its present facilities, it is stated.

Philadelphia

PHILADELPHIA, PA., November 28, 1911.

Merchants are doing better, although the aggregate of the past week by no means represents what might be termed good business. A greater number of orders for machine tools have been booked by some of the local dealers, the bulk of which are in the nature of comparatively fresh business. There is the same hesitancy displayed in negotiations which have been under consideration for some time although the trade feels that the more pronounced buying by the railroads will have a favorable influence on other pending projects. Sales have been closely confined to single tools, either of the usual standard or special types; here and there reports of transactions covering the purchase of a few tools are heard, but very little business is pending involving any large purchases of shop equipment.

Manufacturers show but little improvement in plant operation. Considerable irregularity is noted in the receipt of orders, and some special tool makers, who have been quite busy heretofore, are now feeling the effect of quieter conditions. The bulk of the orders coming in are from consumers outside of this particular district. Boiler makers and engine builders have been taking some fair orders although the better share of the business has been in the smaller equipment. The second hand machinery trade continues on an irregular basis; buying covers a very general range of machine shop equipment, as well as boilers and engines, although in none of these lines has the demand been active. Developments in the foundry trade have been unimportant, although indications of better buying of castings for use in connection with railroad equipment construction are to be noted.

The John T. Baily Company, rope and twine manufacturer, has broken ground for a two-story reinforced concrete addition to its plant at Tasker and Water streets. The addition will be irregular in shape, measuring about 60 x 150 x 350 ft., and will be used on completion for general manufacturing purposes. New machinery for rope and twine making will be installed, as well as additional power equipment for generating electricity.

The Woodhouse Chain Works, Trenton, N. J., is operating its plant on a basis of 90 per cent. of full capacity, the principal demand being for high grade hand made chain, particularly of the heavier type. A duplicate order for something over 100 lineal ft. of special dredge chain has just been shipped to a customer in the Far West. The Woodhouse Works is now preparing its machinery for operation in the making of proof coil machine chain, up to one in. in size.

Isaac A. Sheppard & Co., stove manufacturers, who recently disposed of their plant at Fourth street and Montgomery avenue to the John B. Stetson Company, have purchased a site of seven acres at Erie avenue and Sepviva street, on which a complete modern stove manufacturing plant will be erected. Plans for the buildings are now in preparation and consideration is being given to the question of power and general equipment, although requirements have not been decided upon.

The Trenton Iron Company, Trenton, N. J., is installing additional power equipment comprising a 1000-hp. gas engine built by the Bethlehem Steel Company, to operate in direct connection with a Crocker-Wheeler Generator. New gas producers for use in connection with the new engine will be furnished by R. D. Wood & Co. The Trenton Iron Company has been increasing its operative capacity in several of its various departments and has a comparatively good volume of business on its books. A recent order, on which work has been started, is for an aerial tramway of the Bleichart system for the Saline Valley Salt Company, operating in southern California. This system will be 14 miles long and have a capacity of 25 tons per hour.

The city of Philadelphia has taken title to the plant of the Abrasive Material Company, Seventy-second and Upland streets, for boulevard purposes. The company will therefore proceed at once on the erection of its proposed new plant in Bridesburg in the northeastern section of the city, reference to which has previously been made. Plans for the new buildings are practically completed and consideration is now being given to the power equipment, which will probably include both steam and electric power.

William Wharton, Jr. & Co., Incorporated, note increased activity in their railroad department, street railway track equpiment being customarily quiet at this season. Inquiries are said to be of a more promising nature.

It is stated that a plot of ground located at Broad, Wallace and Fifteenth streets, 100 x 400 ft., has been sold to a syndicate which will improve it by the erection of an eight or ten story commercial building. George F. Lasher, Morton B. Hirsch and Harrison C. Rea are said to be interested in the project.

Chicago

CHICAGO, ILL., November 28, 1911

Activity in the purchase of machinery continues in this market and the past week witnessed the buying of machinery for many classes of manufacture. The International Harvester Company bought nine lathes having a total value of approximately $4500. Sales of machines in Illinois to the amount of several thousand dollars are reported, among which is noted one lot aggregating $3000. Among other purchases recorded were four Gardner disc grinders, two being the patternmaker's type. The Chicago, Burlington & Quincy Railroad purchased the bolt cutters mentioned last week but the Illinois Central list is still in the market. A manufacturer in one of the Chicago outlying districts is receiving propositions on tools aggregating in value $10,000. Sales of a number of second hand millers and planers added to the volume of business. The effect of the long continued meager business wears off but slowly and the necessity for encouraging purchases by concessions of various kinds continues to reduce the margins on which tools are sold.

The Burkel Mfg. Company has been incorporated to do a general manufacturing and mercantile business by Andrew J. Ryan, I. I. Livingston and Daniel Jerka.

The Acme Automatic Tire Pump Company has

been incorporated with a capital stock of $50,000 by Oscar Ralston Holbo, Henry Nicolas Hansen, Fred B. Cavanaugh and George Washington York.

The Electric Appliance Company has been incorporated with $60,000 capital stock to manufacture and deal in electrical appliances, apparatus, etc. The incorporators are William W. Lowe, Thomas I. Stacey, and William B. Walrath.

The Mogul Motor Truck Company has been incorporated with a capital stock of $125,000 by George C. Griffith, L. S. James, Frank Dawson and John F. Hicks to manufacture and deal in motor vehicles.

The Rockwood Sprinkler Company has filed notice of an increase in its capital stock from $100,000 to $150,000 and of its directors from three to five.

The United States Steel Grain Door Company has been incorporated with a capital stock of $5000 to do a general manufacturing and merchandise business. The incorporators are I. E. Burtis, G. Burtis and H. W. Drew.

The Solar Inverted Arc Lamp Company has been incorporated with $10,000 capital stock by David Broutman, Isadore S. Krinsky and Samuel Solomon, to manufacture and deal in gas and electric fixtures and appliances.

The plant of H. W. Caldwell & Sons Company was visited by fire November 21. The damage was confined to the conveyor department of the works and was not sufficient to interfere with the regular routine of the company's business nor to handicap it in making the usual deliveries on orders.

The Illinois Culvert Company, Springfield, Ill., has been incorporated with $12,000 capital stock by L. R. Craig, A. E. Heywoth, and Fred L. Vermillion. The company will manufacture culvert pipe, roofing, etc.

The Corrugated Iron Specialty Works, formerly located at White Hall, has begun installing machinery in its new factory at Harvard, Ill.

The Lake Shore & Michigan Southern has under consideration the building of railroad yards and shops at Miller, a few miles east of Gary, Ind., which will require an expenditure of $200,000.

The Illinois Central Railroad has plans prepared for a new round-house at Champaign, Ill., which include among the tools to be installed, a planer, sensitive drill, shaper, double emery grinder, bolt cutter, grindstone, 22 and 36-in. engine lathes.

The Crawford Locomotive & Car Works, Streator, Ill., has under contemplation the improvement and enlargement of its present plant. The immediate improvements planned are in connection with the power plant and forge shops.

Smith & Harsman, Peoria, Ill., have purchased property on North Orange street in that city and expect to erect there a new machine shop.

The Avery Company, Peoria, Ill., builder of tractors and motor trucks suffered a severe fire loss last week causing damage to the amount of $150,000 to its boiler shop. The injured portion of the plant will be rebuilt at once.

The Burr Company, Champaign, Ill., with $100,000 capital stock has been incorporated to do a general manufacturing, structural iron, steel products, foundry and machine business. The incorporators are E. M. Burr, N. C. Bur and Manford Savage.

The Olney Lumber & Mfg. Company, Olney, Ill., has increased its capital stock from $10,000 to $20,000 for the purpose of extending its mill equipment.

The Chicago Railway Signal & Supply Company, Carpentersville, Ill., has been incorporated with $10,000 capital stock by John F. Fierke, Howard C. McNeil and Charles E. Griffith, and will equip a plant for the manufacture of railroad signals and similar appliances.

The Middleton Auto Company, Eagle Grove, Iowa, has been incorporated by Lyman B. Middleton and Claude E. Middleton.

The Hay Tool Mfg. Company, Council Bluffs, Iowa, whose plant was recently destroyed by fire, is rebuilding and expects to purchase machinery to the amount of several thousand dollars.

The Kiel Motor Car Company, organized by Fred Theissen and Phillip Juenheimer, will build a new plant at Kiel, Wis. The company has been incorporated with a capital stock of $14,000.

The Automatic Trip Carrier Company, Rice Lake, Wis., has had plans prepared for a brick factory, 50 x 200 ft., with an engine room, 24 x 24 ft. The plant will be equipped with up to date machinery with individual electric drive.

The J. Q. Clarke Tank Company has been incorporated at Crawfordsville, Ind., with $15,000 capital stock to manufacture tanks, fountains, etc. The directors are J. Q. Clarke, J. H. Elder and H. S. Binford.

Detroit

DETROIT, MICH., November 28, 1911.

Business is light, the improvement in the machine tool trade that made itself manifest during the early part of the month not being sustained. A number of fair inquiries for metal working machinery are in sight, but merchants are finding it difficult to close definite orders and the belief is general that no really big business will be done until after the holidays. Dealers continue to do a good business in shop supplies. Second-hand machinery is in moderate demand, sales of metal working equipment predominating. Gray iron foundries are booking a good volume of orders, particularly those which make a specialty of motor castings. Makers of steel castings also note the demand as somewhat improved.

Many of the more important counties of this State are preparing to devote large sums to roadmaking the coming year and a good market for machinery for this purpose is looked for.

Exploratory and mining operations are being actively carried forward in the iron mining district of northern Michigan and reports indicate that considerable machinery is being installed, including drills, boilers and hoisting equipment.

The Detroit Edison Company has added $6,000,000 to its capital, increasing the capital stock to $15,000,000. Vice-President Alexander Dow states that the increase is to provide for extensions and improvements to the company's plants and system that will be needed during the next few years. The company is taking figures to enlarge its battery station recently completed at Brush and Macomb streets.

The Art Stove Company is building a brick factory addition and warehouse at its plant at Milwaukee avenue and Russell street.

The Simpson Tire Fibre Company has been incorporated with a capital stock of $100,000. Incorporators named are S. L. Simpson, James D. May and Harry J. Dingemann, all of this city. No particulars are available, but it is reported that the new company will manufacture automobile tire protectors.

The Scripps Motor Car Company will erect a large addition to its present plant on Clinton street.

The West Side Brewing Company has awarded preliminary contracts for the erection of a new wash room and storage cellar adjoining its present plant.

The plant of the Universal Radiator Company at Hart and Charlevoix avenues has been sold to the Michigan Electric Welding Company. The Radiator Company will wind up its business and the machinery will be sold. The new owner will shortly equip the plant for its own use.

The Consolidated Light & Power Company of this city, of which J. L. Hudson is president, has purchased the Milling, Light & Power Company at Clare, Mich. There are five power dam propositions in the vicinity of Clare which the company will carry to fruition during the coming year.

The Detroit Tube Products Company is a new organization, incorporated with a capital stock of $40,000. Among those interested are A. C. Jones, H. E. Bellaimey and F. W. McClellan. No manufacturing plans have been announced.

The Central Foundry Specialty Company has been incorporated with a capital stock of $25,000. George J. Zimmermann is at the head of the new company, which will engage in the manufacture of gray iron castings.

Construction bids on the new power plant for the University of Michigan at Ann Arbor were found to be in excess of the amount appropriated, $280,000. It is considered probable that the Regents will call for new bids on the work.

The city of Lansing, Mich., is completing an addition to the municipal electric light and water station in which a large air compressor, yet to be purchased, will be installed. The Water Works Board has the matter in hand.

The Giles Boat & Engine Company, Ludington, Mich., which has heretofore been exclusively engaged in the manufacture of gasoline engines and launches, will add a new apartment for making stationary engines, fruit sprayers and pumps. About $10,000 will be expended for new machinery.

The New Process Steel Company, Marshall, Mich., operating a steel castings plant, has filed an involuntary petition in bankruptcy and the Detroit Trust Company has been appointed receiver. The plant will probably be continued in operation by the receiver until a sale can be consummated.

The Brooks Mfg. Company, Saginaw, Mich., which

recently increased its capital stock to $400,000, will install a new department for the making of knock-down houses and will enlarge the facilities of its present departments. Some new wood working machinery is expected to be purchased.

The Tilden Saw & Mfg. Company, Wyandotte, Mich., is preparing to begin the manufacture of a patent self-loading barrel truck. The new department will be in operation by January 1.

The Havers Motor Car Company, Port Huron, Mich., has increased its capital stock from $60,000 to $200,000 to take care of rapidly increasing business.

The taxpayers of Farmington, Mich., will vote November 28 to authorize the issuance of bonds to the amount of $15,000 for a water works system.

Preliminary steps are being taken by the City Council of Battle Creek, Mich., for the establishment of a municipal electric lighting plant in that city.

The Visible Spark Plug Company, Detroit, has been incorporated by Wesley S. Rapp, M. W. Hearn and S. S. Sutherland with a capital stock of $10,000. The new company will engage in the manufacture of spark plugs and carburetors.

Cleveland

CLEVELAND, OHIO, November 28, 1911.

The recent improved demand for machine tools has not been maintained. Dealers are getting a moderate volume of single tool orders. No sales of any size, however, were reported during the week, the largest lots being not more than 3 or 4 tools. The general situation is regarded by many manufacturers in metal working lines as improved and some plants are getting a better volume of orders. The placing of railroad equipment orders, however, is mainly responsible for the better feeling. Reports from machinery salesmen indicate that some manufacturers who might be in the market for machinery will do nothing until after the first of the year, so that the indications are that December will be a dull month. Business with some machine tool builders is better than it was a month ago but orders are still unsatisfactory. Builders of automatic screw machinery are doing a good business in their products but the demand for screw machinery is not active. Scattered orders are coming out for bolt and nut machinery. The demand for sheet metal working machinery is somewhat improved.

Considerable second hand machinery is being offered to dealers at the present time. The demand is not active.

The Nickel Plate Railroad has prepared plans for extensive additions to its shop plant at Conneaut, Ohio. The erection of a new 30-stall roundhouse will be started in a few days, it being the intention to complete 22 of these stalls at the present time. The roundhouse will be of structural steel and concrete. Plans have also been prepared for a power house and machine shop but the plans for these have not yet been approved.

Bids will be received by the Board of Commissioners for the erection of the Lima State Hospital December 19 for the mechanical equipment at the hospital near Lima, Ohio. Plans and specifications are on file at the office of the architect, Frank L. Packard, New Hayden Building, Columbus, Ohio.

The Cuyahoga Realty Company, Akron, Ohio, will erect a large garage and store room at 41-45 North High street in that city.

The L. McCormick Sanitary Trap Company, Chicago, Ohio, has been incorporated with a capital stock of $15,000 by O. C. McCormick and others to manufacture sanitary traps.

The Standard Steel Tank Company, Girard, Ohio, formerly the Ohio Boiler Company, has commenced the erection of an addition that will double its present capacity.

The Mead & Musser Company, Cleveland, has been incorporated with a capital stock of $10,000 by R. C. Linder and others to manufacture hardware specialties.

The Campbell Bros. Mfg. Company, Harrison, Ohio, has been organized with a capital stock of $35,000 by Albert W. Campbell and others to manufacture agricultural implements.

With a capital stock of $50,000 the Twentieth Century Mfg. Company, Mansfield, Ohio, has been incorporated to manufacture washing machines.

The Chisholm & Moore Mfg. Company, Cleveland, has awarded a contract for the erection of an addition to its machine shop. The building will be of brick, 27 x 54 ft. and two stories.

Bids will be received by the Director of Public Service, Cleveland, December 7 for air compressor equipment for the Kirkland pumping station. Specifications are on file with the superintendent of the Water Department.

The Deming Company, Salem, Ohio, is enlarging its foundry by the erection of an addition 50 x 50 ft.

The Sandusky Auto Parts & Motor Truck Company, Sandusky, Ohio, has increased its capital stock from $150,000 to $500,000.

The Universal Machine Company has practically completed its new plant at Bowling Green, Ohio. The principal products will be belt machinery, the Toledo marine engines and automobile parts.

Cincinnati

CINCINNATI, OHIO, November 28, 1911.

A number of machine tool builders report an improvement in both domestic and export business. Several nice-sized orders were booked last week, but it cannot be claimed that the general business situation has cleared up enough to warrant the building up of any great hopes for the immediate future. However, there is a demand for skilled mechanics at the local office of the National Metal Trades Association, showing that manufacturers in this district are probably busier than in other sections of the country.

Small boilers continue fairly good sellers, in spite of the fact that this is not the season for letting heating contracts. Gas engine manufacturers are busy, but steam engine builders have entered into a rather dull period.

Wm. H. Doolittle, factory inspector for the National Metal Trades Association, is in Cincinnati visiting the plants of members in this district, and reports practically every factory visited as being well equipped with latest safety appliances for the prevention of industrial accidents. This is a new idea of the Metal Trades Association, and members are very much pleased with it. The inspector's services are free to all members.

The Co-op Club, composed of students taking the co-operative course in engineering at the University of Cincinnati, held its fifth annual meeting and banquet on the evening of November 23. The following speakers addressed the gathering Prof. A. M. Wilson, Dr. John Burnham, J. M. Manley, and Mr. Calhoun, of the Mercantile Library. About 300 club members were present, an indication that the organization is a popular one with the students.

It is reported that the Russell Company, Dayton, Ohio, has made arrangements to finance a new company that will erect a hydroelectric plant near Woodsdale, Ohio, that will cost over $500,000. W. H. Zimmerman & Co., Chicago, are the engineers who made up estimates for the new project.

On November 23 fire almost completely destroyed the plant of the J. Baum Safe & Lock Company, Cincinnati, the estimated loss being about $50,000. The company has already leased new quarters that will be fitted up at once, and for which some special equipment will be required.

The Hooven, Owens, Rentschler Company, Hamilton, Ohio, has just received a second order from the Ford Motor Car Company for a 2500 h.p. gas engine to be installed in a new plant now in course of erection at Toronto, Canada.

Considerable structural material will be required for the construction of the Ludlow avenue viaduct, bids for which were opened last week by the Cincinnati municipal authorities. It is generally believed that the contract will be awarded to the Cranford Construction Company of Cincinnati, now building the Gilbert avenue viaduct, mentioned some time ago.

F. W. Alstaetter, major, United States Engineering Department, Wheeling, W. Va., will open bids December 23 for the necessary structural steel, forgings, castings, &c., for the lock at Dam No. 28, Ohio River.

Contract for the addition to the plant of the Columbus Wire & Iron Works, Columbus, Ohio, recently mentioned, has been awarded to A. Beyer & Son, of Columbus.

It is rumored that the Dayton Steel Construction Company, Dayton, Ohio, has plans under way for a one-story plant to be used in fabricating structural steel.

The Cincinnati Commercial Association announces that it has secured more commodious quarters in the Carew Building, and will move from its present location in the Union Trust Building, some time in December.

The new plant of the Eagle Woodenware Company, at Hamilton, Ohio, recently mentioned, is nearly completed and will soon be ready for the necessary manufacturing equipment. The new structure is of brick, one story and measures about 50 x 150 ft.

Unconfirmed reports have been circulated to the effect that the Virginian Railroad Company will soon spend about $2,000,000 for improvements to its yards and shops at Princeton, W. Va.

The Metal Flanged Concrete Pipe Company has been incorporated at Mt. Gilead, Ohio, with $15,000 capital stock. Among the incorporators are S. C. Roettinger, W. L. Paxson and others.

The Cincinnati Ice Company will probably build an ice and cold storage plant at Dayton, Ky., some time next year.

The South

LOUISVILLE, KY., November 28, 1911.

Business is improving somewhat, compared with the situation a week ago. There is no especially marked development to which the betterment may be ascribed, except that the more favorable condition of the cotton market is encouraging the movement of the crop and thereby increasing the supply of money. The demand for refrigerating and power machinery is good. Sawmill equipment is in fair demand, though the dullness of the lumber market is hurting this trade somewhat. Gasoline engines are selling well.

Manufacturers' agents report that sales in the South have been much larger than in other sections, and that this territory is making a handsome increase over the corresponding period of last year. Southern farmers and Southern manufacturers are buying more and better machinery of all kinds.

The fire damage to the foundry of the Henry Vogt Machine Company, Louisville, has been repaired, and the department will be operating as before within a few days.

E. D. Morton & Co., Louisville machinery dealers, report the sale of two Warner & Swasey lathes to the Standard Sanitary Mfg. Company for use in its Louisville plant; a St. Louis grinder to the Webster Loose Leaf Mfg. Company, Louisville, and a Wells grinder to the J. V. Pilcher Mfg. Company, Louisville.

The Transit Motor Car Company, Louisville, has been incorporated with $20,000 capital stock for the manufacture of motor trucks. The officers of the company are E. C. Walker, president; George Laib, vice-president, and W. B. Young, secretary and treasurer. The concern takes over the plant of the E. C. Walker Mfg. Company at Jackson and Lampton streets and will continue its business of making gasoline engines. No changes in the equipment will be made immediately, but enlargements are expected later on. The company will manufacture gasoline trucks in 2, 3 and 4-ton sizes.

The Kentucky Saw Works, Louisville, reports a fairly good business, though sawmill operators are proceeding conservatively in view of the sluggish condition of the lumber trade. The concern recently installed a Hanchett automatic saw sharpener in its plant.

The project to build a power canal at Louisville to utilize the energy developed by the falls of the Ohio, which was suggested by Mayor Head, has been abandoned because of an unfavorable report by the engineers appointed to investigate its feasibility.

The Louisville Gas Company has let a contract for the installation of a coal conveying system at its power plant to the Jeffrey Mfg. Company. The sale was made through Fred. B. Wehle.

E. B. Norman & Co., of Louisville, have announced plans for the development of a 28,000-acre timber tract at Holly Ridge, La., and will erect a large double-band mill with a capacity of 70,000 ft. The erection of the mill has been begun. Most of the equipment has been contracted for, members of the company stated.

The Mengel Box Company, Louisville, has let a contract for the erection of a large reinforced concrete box factory at Winston-Salem, N. C. The building will be completed by June 1, 1912. A lot of woodworking machinery will be purchased. T. S. Hamilton, mechanical engineer in charge of this work, said that the major portion of the equipment would be of special design.

Alexander Bros., Cadiz, Ky., have purchased a lighting franchise from the municipality and will erect a plant in connection with the ice factory which they are now operating.

The Kenessee Coal Company, Somerset, Ky., has been incorporated with $100,000 capital stock by J. M. Ross, John B. Pieratt and G. W. Hill. The company will develop 1000 acres of coal land at Worley, Ky.

H. E. Bullock, Pineville, Ky., is purchasing machinery for the Black Mountain Coal Company, Barbourville, Ky., which is making openings for the development of 2500 acres of coal lands near Burchfield, Ky.

The Louisville & Nashville Railroad has purchased a 100-ton scales from the Fairbanks-Morse Company for installation at Maysville, Ky. The railroad company is reported to be expending a considerable amount in the improvement of its shops at Howell, Ind., near Evansville.

The Sears Lumber, Coal & Development Company, Jackson, Ky., has organized with $100,000 capital stock. The incorporators are M. F. Gray, Max Lange, M. G. Jenkins and O. A. Sears.

The Kentucky Traction & Terminal Company, Lexington, Ky., has let contracts to the General Electric Company for the equipment of substations at Frankfort, Paris, Nicholasville and Georgetown, Ky., as well as the main power-house at Lexington.

J. T. Day, Hazel Green, Ky., is planning the installation of an electric light plant.

The Roy Patton Lumber Company has been organized at Jackson, Ky., and has taken over the saw and planing mill of Thomas Bundy. It will be equipped with additional machinery for the manufacture of automobile bodies and spokes.

The Daviess County Distilling Company, Owensboro, Ky., the bottling house and warehouse of which were burned recently, has announced that the bottling equipment will be replaced and operations continued.

The E. E. Sutherland Medicine Company, Paducah, Ky., has let a contract for the erection of a three-story reinforced concrete building. A steam heating plant will be installed, and electric motors, a hoist and elevators will be purchased. There will also be a printing department.

The Middlesboro Waterworks Company, Middlesboro, Ky., has filed amended articles of incorporation, increasing its capital stock from $5000 to $50,000.

H. G. Garrett, J. M. Stevenson and W. T. Ogden, all of Winchester, Ky., have made plans for the erection of a factory for the manufacture of a patented gas. They have secured the Kentucky rights from a New York company controlling the patents.

The New South Brewery & Ice Company, Middlesboro, Ky., the plant of which was destroyed by fire November 22, has announced that it will rebuild.

The Southern Mining Company, Williamsburgh, Ky., has leased from the Asher Coal Mining Company, Wasioto, Ky., 16,000 acres of coal land in Bell County, Ky. The Southern Company plans the expenditure of $500,000 in developing the property and equipping mines, some of which are now in operation. The Asher company recently established an agency in Louisville, and it is expected that improvements will be made in the elevators and other equipment there.

The Jellico Electric Light, Heating & Power Company, Jellico,, Tenn., is making a number of improvements, having installed a 200 hp. boiler and a new smokestack being in course of erection. The stack will take care of the new boiler and also an additional one of equal power which it is intended to install later.

The J. & J. Electric Company, Memphis, Tenn., has incorporated with $250,000 capital stock. Charles Johnson, Claude Johnson, W. T. McLain and others are interested.

R. H. Hart has been appointed receiver of the Standard Machinery Company, Chattanooga, against which a petition in bankruptcy was recently brought. The receiver will carry out contracts which the concern now has.

A foundry and machine shop are to be equipped at Greeneville, Tenn., by S. L. Williams & Sons.

The Southern Tire & Rubber Company, Augusta, Ga., has been incorporated with $125,000 capital stock by W. A. Smith, H. S. Dunbar and J. P. Armstrong for the manufacture of automobile tires, hose, belting and other rubber goods.

The Texarkana Ice Company, Ashdown, Ark., has been given a franchise for the operation of an electric lighting system.

Gravette, Ark., is to issue $25,000 of bonds for the purpose of erecting an electric light plant. E. L. Chatfield is chairman of the committee in charge.

The Standard Portland Cement Company, Charleston, S. C., has announced that it will double the capacity of its plant at Leeds, Ala., and will install a steam turbine plant. F. H. Lewis, Birmingham, is the engineer in charge.

Bennington, Okla., will let contracts for equipment for its waterworks plant after December 15, when bids will close. Pumping equipment, tanks, a tower, pipe, etc., will be required. Nagel & Peterson, Muskogee, Okla., are the engineers.

The Mebane Iron Bed Company, Mebane, N. C., is in the market for a power punch press, used preferred.

An electric power plant will be built on Coosa River, Ala., by the Ragland Water-Power Company, of which W. T. Brown is engineer. Martin H. Lide, Birmingham, Ala., is the engineer in charge.

The Fairbanks-Morse Company has been awarded a contract for the equipment of a round-house and repair shops of the Seaboard Air Line at Savannah, Ga. The cost will approximate $150,000.

The Allen Nut Lock Company, New Orleans, La., has been incorporated with $300,000 capital stock by Oglesby Allen, Jr., Joseph G. Allen and others for the manufacture of a patented nut-lock.

The Victor Huber Marble & Granite Company, New Orleans, La., is reported to be planning the erection of an addition to its cut-stone plant.

The Texas Pine Tar Company, DeQuincy, La., will erect a plant for the manufacture of resinous products. Power equipment, including an engine and boiler, will be purchased, as well as retorts, stills, etc.

The Central Foundry Company, Oklahoma City, Okla., will erect an addition to its plant.

Automobile gearings and other machinery parts will be manufactured by F. J. Milman, Clinton, S. C., who contemplates the establishment of a machine shop at Greenwood, S. C.

The Georgia Supply & Machine Company, Atlanta, has taken over the plant of the Georgia Foundry & Machine Company and will erect an additional foundry. M. N. Griffin is president of the company, which was recently organized with $60,000 capital stock.

The Barrett Mfg. Company, New York, is reported to be planning the erection of a large plant at Corey, Ala. The estimated cost is $150,000.

The Reid Lumber Company, Birmingham, Ala., is erecting a sawmill at Coker, Ala.

R. F. McMackin, Johnson City, Tenn., is erecting a sawmill near Ewart, N. C., and will manufacture lumber from a timber tract at that point.

The Ideal Garage Company, Frederick, Md., has been incorporated with $30,000 capital stock to take over the business of the Frederick City Garage Company. The company will erect a building, 50 x 234 ft., with a machine shop attached.

St. Louis

ST. LOUIS, MO., November 27, 1911.

As the winter season develops the business in the machine tool market shows increasing activity in a general way, but there are no particular lines that show more activity than others nor are there any specially large orders for equipment coming in. There are some good-sized lists likely to come forward as soon as some factory construction work, now under way, reaches a more advanced stage, but at the present time the demand seems to be still confined to the single tool request, with some degree of activity in the second-hand division of the market. Some of the inquiries coming show growing interest in the Southwestern territory tributary to St. Louis and these look likely to develop into orders before long.

The work on the Wrought Iron Range Company's new plant at St. Louis is well under way, the provision being for a fourfold increase in capacity. The boiler house, blacksmith shop and garage will all be separate buildings from the main plant, which is to be 304 x 313 ft., two stories.

Fire the past week destroyed the paint and putty manufacturing plant of the Markay Mfg. Company at Theresa and Gratiot streets, St. Louis. It will be rebuilt and re-equipped with machinery.

The St. Clair Water Company, with $100,000 capital stock, has completed incorporation with J. D. Houseman of St. Louis, Mo.; J. F. McGowan of East St. Louis, and John B. Downman and P. W. Page of St. Louis as stockholders, for the purpose of supplying of water to East St. Louis upon the expiration early in the coming year of the 50-year franchise now held by the City Water Company of East St. Louis.

The Bessemer Coal & Mining Company, St. Louis, owning six mines in Perry and St. Clair counties, Ill., has been reorganized and will itself operate three mines in Perry county, while a new company, not yet named, will operate three mines in St. Clair county. The mining equipment will be considerably remodeled and brought down to date.

The Prest-O-Lite Company, Indianapolis, Ind., has begun work on its branch plant in St. Louis, and will soon be in condition to consider the equipment of the factory.

The Fulton Iron Works Company, which is building a new $500,000 plant on the western St. Louis limits, is progressing rapidly with the structures which will soon be in shape to receive their final equipment.

The American Furnace Company is pushing to completion its new factory building, 2725-31 Morgan street, which is two stories and equipped with electric elevator service and a fan system of heating and ventilating. The new equipment will include two riveting machines, each capable of setting 70 cold rivets per minute and pneumatic tools for chipping castings and calking joints. The new building will be occupied in March or April.

The Lee Center Farmer's Elevator Company, Lee Center, Ill., has been incorporated with $100,000 capital stock by A. F. Jeanblanc, Charles W. Ross, F. N. King, E. A. Pommercy and S. L. Shaw to construct and equip a grain elevator.

The Busch-Sulzer Bros. Engine Company has so far completed its $2,100,000 organization as to proceed with the location of a site for its plant and the construction thereof. It will be near the Anheuser-Busch brewery, whose officers control the company which owns the patents of the Diesel oil engine invented by Rudolph Diesel of Munich. The plant will cost about $500,000, and will include a foundry, machine shops and all the other structures necessary for the complete manufacture of the engine. It will employ 600 men when completed.

The Mutual Brewing Company, for which $150,000 capital was recently raised by St. Louis retail liquor interests to establish competition with the breweries, has been incorporated and arrangements are under way for the location and equipment of the plant.

The Martell Automatic Heater Company has completed arrangements to remove its manufacturing plant from St. Louis to Cape Girardeau, Mo.

The Valier & Spies Milling Company, with mills at Marine, Ill., has bought a site in St. Louis for the establishment of a new mill and also for warehouse purposes.

The St. Joseph Tanning Company, with home capital stock of $150,000 in West Virginia, has obtained permission from the Missouri Secretary of State to use $75,000 in the equipment and operation of a tannery at St. Joseph, Mo.

The Oklahoma Land & Mining Co., of Ohio, incorporated under the laws of that State, has obtained formal permission in Missouri to use all of its $30,000 capital in equipping a mining plant at Joplin, Mo.

The Bressolo Wrench Mfg. Company, with $99,000 capital stock, has been incorporated at Spring Valley, Ill., by William L. and F. M. R. Bressolo, Fred Gunther and Anton Faletti to manufacture wrenches and other tools.

The De Sieur Vacuum Can Mfg. Company, East St. Louis, Ill., has been incorporated with a capital stock of $100,000 by St. Vincent De Sieur, C. A. Summers and Theodore Soellinger.

The city of Muskogee, Okla., will receive bids through the mayor for furnishing one 6,000,000-gal. pumping engine.

T. T. Frissell, constructing quartermaster, United States army, Fort Logan, Col., will receive bids until December 20 for the construction of a new water distributing system. Bids should be indorsed: "Proposals for the Construction of New Water Distributing System."

Texas

AUSTIN, TEXAS, November 25, 1911.

Unusually good reports as to the machinery trade come from various parts of Texas and the Southwest this week. Orders for large quantities of machinery of various kinds have been placed, particularly for manufacturing plants. While business conditions generally are still depressed on account of the low price of cotton and the consequent holding of that staple, the effect is not as yet felt materially by the machinery trade. Of course, this does not apply to implements and machinery for farmers. There is very little being done in that line at present.

The Board of Trustees of the State College of Industrial Arts at Denton has let the contract for the new domestic arts building here to Wiggins & Michaud.

of Fort Worth, for $61,831. The heating plant contract was let to White & Donnelly, of Austin, for $7071.

F. W. Abney, Charleston, W. Va., will construct a system of irrigation near Big Springs, at a cost of about $60,000.

The city of Eastland is installing a water works plant and distributing system at a cost of $25,000.

Herman Loeb will install a cotton compress at Marshall, to cost $15,000.

The Trinity River Irrigation district, which was recently created in Chambers County, has been organized by the election of F. M. Hamilton, president, and John Wooten, secretary. Engineers have finished their surveys and estimate that the proposed fresh water reservoir and irrigation system will cost about $125,000 to construct. The proposition of voting this sum for the purposes named will be submitted to the land owners of the district.

The Texas Motor Car & Supply Company, Victoria, has let the contract to the Bailey Mills Company of that place for the erection of an addition to its machine shop.

The Ohio & Texas Sugar Company is to be reorganized and the capacity of its sugar mill at Brownsville doubled by the time of the opening of the next sugar cane grinding season.

The Maverick Gas & Oil Company has been formed at Beaumont with a capital stock of $100,000. The incorporators are J. S. Wheless, W. E. H. McFaddin and W. D. Gordon.

The Carlson Strap Fastener Company has been formed at Wichita Falls, with a capital stock of $10,000. It will manufacture strap fasteners. The incorporators are F. A. Carlson, L. D. Rhodes, E. G. Cook and others.

The Kansas Ice Company is installing a 100-ton ice plant at Belen, N. M.

The Kerr Land Company, Minneapolis, Minn., will construct an irrigation system and develop 25,000 acres of land in El Paso county. It will install a number of pumping plants upon shallow wells.

The Meerschaum Company of America contemplates establishing a factory at Deming, N. M., for the manufacture of articles of meerschaum. Its mines are situated 60 miles north of Deming.

H. B. Johnson and R. H. Bouldare of Silver City, New Mexico, are promoting the installation of a large hydroelectric plant on the Gila River, 65 miles north of Deming, N. M., and the construction of power transmission lines to Deming and through the Mimbres valley to furnish power for irrigating pumping plants and other industries. The whole project will require something like $1,200,000, and the time required to complete it will be between two and a half and three years. The first development contemplated will require from $300,000 to $350,000.

Official announcement is made that the Mexican Midland Light & Power Company, Ltd., of Montreal, Canada, which was recently chartered with a capital stock of $45,000,000, has acquired the concessions and other holdings of the Mexican Hydroelectric Company, which has its headquarters in Mexico City. This new company will, it is announced, carry out the plans of the Mexican Hydroelectric Company for the installation of hydroelectric plants on the Waaranjo River, in the State of San Luis Potosi and the Rio Blanco in the States of Nuevo Leon and Tamaulipas. Besides the available water power that is owned by the company its concession from the federal government called for the construction of systems of electric railroad and several hundred miles of power transmission lines.

The pumping station of the water works plant at Brownwood, Texas, which was recently destroyed by fire, will be rebuilt at a cost of about $10,000.

The Gulf Pipe Line Company has acquired a site at Fort Worth for a large refinery that it will soon erect. It will also lay a six-in. pipe line from Saltillo to Fort Worth, a distance of about 150 miles.

The Southwestern Marble Company of El Paso will install a marble cutting and finishing plant near Mt. Riley, N. M., to cost about $200,000.

The Arizona Marble Company will install a large marble cutting and finishing plant at its quarries near Bowie, Ariz. Gerald Hughes is president.

H. P. Holt and associates will build a plant at Roswell, N. M., for the manufacture of orchard heaters at a cost of $25,000.

The Menard Public Service Company is installing an electric light plant and water works system at Menard.

W. B. Nixon is arranging to add new machinery and enlarge the capacity of its cotton gin at Runge.

The Cody-Dyer Mining & Milling Company, Tucson, Ariz., will install a 100-ton mill at its mines near there. Col. W. F. Cody of Tucson is president.

A new 75-ton cyanide plant will be built at the Mohawk mine near Mammoth, Ariz. T. W. Gundaker of Mammoth is manager.

The Mammoth Mining Company will install a smelter at its mines near Wickenburg, Ariz.

The Black Range Custom Reduction Company will enlarge its mill at Fairview, N. M., to 100 tons capacity.

W. Humphrey and associates will install a 50-ton mill at their Guerguito mine, situated 30 miles from Nacozari, state of Sonora, Mexico.

The Monte Vista Mining Company will build a mill at its mine at El Tigre, state of Sonora, Mexico.

The Athens Pottery Company, Athens, manufacturer of stoneware, has been incorporated to take over the pottery plant at Winfield. The company plans to make improvements to the works and is in the market for two 125-hp. high pressure boilers and one 125-hp. Corliss engine.

Eastern Canada

TORONTO, ONT., November 25, 1911.

Trade is active, and the larger manufacturing concerns appear to have an accumulation of orders that will keep them busy through a large part of the winter. If the plans of railroad and other builders go forward as arranged and if the general development programmes laid out for nearly all the provinces are not held up, it will require continuous activity on the part of the manufacturers of equipment and plant to keep the demand supplied. The new Dominion government at Ottawa will without delay proceed to construct the Hudson Bay Railway. The Ontario government means to extend its Temiskaming & Northern Ontario system toward Hudson Bay. Alberta and Saskatchewan governments are both guaranteeing the bonds of additional branch lines. It would take much space to enumerate the merely public and quasi-public projects that are on the list to be begun energetically in the next twelvemonth. Private enterprise is close in the wake of public enterprise whose activity adds to the security of private ventures and facilitates the financing of these. In manufacturing extension a feature to be noted is the submitting of schemes to towns and cities requiring a municipal loan or calling for the subscription of capital up to a certain percentage of the whole on the part of local investors. This mode of launching new industries is resorted to in behalf of some quite substantial concerns that propose to establish branches in Canada.

A large number of snow plows were ordered this season on account of Canadian lines.

Legal representatives in Toronto of the Semet-Solvay Company, Syracuse, N. Y., have applied to the City Council of Toronto for a site of 100 acres upon which the company would locate a large coke plant. According to their statement, the company would expend $2,500,000 on the proposed works. Coal by-products would also be manufactured. The site desired is in the city's public possession, and is required because it is on the water front. Building operations would be begun at once.

The Cross Fertilizer Company, Ltd., was incorporated by Dominion authority a few weeks ago to carry on business from Sydney, N. S., as the principal center. The capital stock is $300,000. The company will be directed by Alexander Cross & Sons, Ltd., Glasgow, Scotland. The company's works at Sydney are very near completion. Most of the machinery is in place. Operations will be begun by the beginning of December. Some of the waste products of the existing industries at Sydney will be utilized in the new fertilizer plant.

The directors of the Dominion Steel Corporation decided at a meeting in Montreal November 20 that further money to pay the cost of the new plant that is being constructed be raised by the issue of preferred stock, instead of by the sale of bonds.

The Cockshutt Plow Company, Brantford, Ont., has secured a controlling interest in the Adams Wagon Company and Brantford Carriage Company. Each of the plants acquired employs several hundred hands, and is to be enlarged.

Finlay Bros., stove manufacturers, Carleton Place, Ont., will enlarge their plant by about 50 per cent. They now employ 150 hands. A by-law is to be voted on by the ratepayers to fix the company's assessment for a number of years at a specified amount.

The Ware Mfg. Company is beginning the construction of a factory at Oakville, Ont.

The Barber Ellis Company, Brantford, Ont., has plans for the erection of a new plant in that city. There will be a main factory of 70 x 300 ft.

J. H. Cole, Cleveland, Ohio, has been in communication with the Mayor of Owen Sound, Ont., in reference to the proposal to establish a nut and bolt factory in Owen Sound. He expects to include a plant for wire drawing.

The Shawinigan Water & Power Company, Shawinigan Falls, Que., has completed the development of a great part of its new plant providing for the 75,000 hp. for use in Montreal. There are five new penstocks of 15,000 hp. each, which are eventually to be carried to a separate power house now erected, and in which are to be installed two complete units of 15,000 hp. each, with a new steel tower transmission line operating at 100,000 volts, and an independent terminal station at Maisonneuve.

Stansfield's, Ltd., Truro, N. S., is preparing to make a large addition to its already large knitting mills plant.

The ratepayers of Newmarket, Ont., have voted in favor of the Town Council's agreement with the Harding Automobile Company, under which the company undertakes to build and operate an automobile factory in Newmarket on the town's granting a loan of $25,000.

The Smith Foundry Company, Ltd., Fredericton, N. B., has begun the erection of a new plant to replace its buildings recently burned. There will be a machine shop, blacksmith shop and pattern department. The company will require a new complete outfit of general machinery for such purposes, all to be electrically operated.

The Canadian Hanson & Van Winkle Company, Ltd., Toronto, has been incorporated with $100,000 capital stock to take over the Canadian business of the Hanson & Van Winkle Company, Newark, N. J., and the Robert G. Bruce Company, Ltd., Toronto. The new company has purchased a site in Toronto and has begun the erection of buildings, including an up-to-date foundry for nickel castings. The company will engage in the manufacture and sale of electroplating chemicals, mill and foundry supplies.

The Standard Silver Company, Toronto, Ont., is erecting a five-story factory and will equip it with modern machinery for the manufacture of electroplated ware.

Western Canada

WINNIPEG, MAN., November 24, 1911.

A healthy optimism seems to pervade the industrial life of western Canada, and although there will not be much activity for a couple of months, on account of cold weather, the outlook for next spring is very favorable. Already plans are being made for a considerable number of buildings. A great deal of money has been invested here during the year, and the railroads have spent many millions in extension work. That together with the money from a larger crop than ever before, even after considerable injury through climatic conditions, has caused money circulation to be quite satisfactory.

Next month a by-law will be submitted to the ratepayers of St. Boniface to raise $200,000 for a gas plant. It is proposed that it be owned and operated by the municipality.

The town of Neepawa, Man., is calling for tenders, up to December 15, for cast-iron water pipe, pumping machinery, mechanical filters, water tower, and other apparatus in connection with the waterworks there. R. H. Fusee is the chairman of the committee.

Bloedel, Stewart & Welsh, Ltd., recently organized at Vancouver, B. C., have acquired the large timber holdings of T. L. Shevlin and of the Gulf Lumber Company, are building five miles of logging railroad and for the present will operate as loggers, but will erect a large lumber mill later.

The Phoenix Lumber Company, Ltd., Transcona, Man., has been incorporated with a capital stock of $20,000, to carry on business as timber, pulp and lumber manufacturer and general contractor.

The Riverside Lumber Company, Ltd., Calgary, Alberta, has applied for a site in the Calgary industrial area, on which to build a sash and door factory.

The Wattsburg Lumber Company, Wattsburg, B. C., has applied to the city of Calgary, Alberta, for a site near the junction of the Canadian Northern and Canadian Pacific railways upon which to establish a lumber plant.

The Alberta British Columbia Lumber Company, Ltd., has been incorporated at Cranbrook, B. C., with a capital stock of $500,000.

M. Conlin is preparing to build a ten-story hotel in Vancouver, B. C. It will be of reinforced concrete, and will cost about $300,000.

The Grand Trunk Pacific Railway has bought a site in Moose Jaw, Sask., on which it is said a union station will be erected for that road and the Canadian Northern.

A by-law authorizing the gift of 10 acres of land at Bare Point is to be submitted to the ratepayers of Port Arthur, Ont. It is proposed to erect there a glucose factory to employ 150 men at the outset. The parties seeking the site also ask that the plant be assessed for ten years at a fixed valuation of $75,000.

The Dominion Match Company proposes to establish a very large match factory in British Columbia. What is known as the Parker process will, it is said, be employed in the works. Ray Thompson, Vancouver, B. C., is the secretary and treasurer of the company.

The Canadian Collieries, Ltd., Dunsmuir, will expend $1,600,000 in the next twelve months upon new equipment and other improvements in its Cumberland coal field on Vancouver Island, B. C. Grant Smith & Co., Vancouver, B. C., have just received a contract from the Collieries to develop a water power at a cost of $800,000, the purpose being to furnish electrical power to run the mines and operate the company's railway from Cumberland to Union Bay.

J. Gusman, representing Milwaukee interests, has applied to the municipal authorities of Calgary, Alberta, for a site on which to establish a brewery to cost at the outset not less than $100,000.

The reduction works the Granby Consolidated Company is preparing to start at Goose Bay, on Observatory Inlet, B. C., will, it is estimated, cost $1,000,000. The plant will be equipped with a converter for manipulating the copper matte into blister copper, which will be shipped to a New York refinery.

Government Purchases

WASHINGTON, D. C., November 27, 1911.

The office of the depot quartermaster, Army Building, New York City, will open bids December 4, under schedule 265, for furnishing one vertical simple pump.

The lighthouse inspector, fifth district, Baltimore, Md., opened bids November 13 for furnishing and installing an oil engine air compressor for fog signal as follows: Skinner Shipbuilding & Dry Dock Company, $268.74; Spedden Shipbuilding Company, $286.68; McIntyre & Henderson, $420; Marine Railway Machine & Boiler Works, $475.

The Isthmian Canal Commission, Washington, opened bids November 22, under canal circular 662, for locomotive cranes and hoisting engines as follows:

Class 1, fourteen 15-ton locomotive cranes, American Hoist & Derrick Company, St. Paul, Minn., $49,700 and $33,916; Brown Hoisting Machinery Company, Cleveland, Ohio, $48,400; Browning Engineering Company, Cleveland, Ohio, $34,000; Industrial Works, Bay City, Mich., $30,400; McMyler Interstate Company, Bedford, Ohio, $39,400 and $32,440; Ohio Locomotive Crane Company, Bucyrus, Ohio, $27,140; Horton & Steinbrenner Company, Chicago, Ill., $26,352, and $27,984.

Class 2, item 1, four 11-ton stiff-leg derricks—American Hoist & Derrick Company, St. Paul, Minn., $22,057.84; McMyler Interstate Company, Bedford, Ohio, $12,296; Modern Steel Structural Company, Waukesha, Wis., $14,200; Lidgerwood Mfg. Company, New York, $11,988.

Class 2, item 2, four hoisting engines for derricks—American Hoist & Derrick Company, St. Paul, Minn., $6,195.28, $6,582.12 for electrical equipment, $204.90 each for transformers; Lenher Engineering Company, New York, $7,800, $10,400 including electrical equipment and $90 each for transformers; Williamson Brothers Company, Philadelphia, Pa., $5,180; Lidgerwood Mfg. Company, New York, $13,340; alternate propositions, steam equipment, $2,674, $2,333, $3,140; alternate propositions for electrical equipment, $2,893, $3,430, $5,110 and $5,322; transformers, $250 and $401.50.

The Isthmian Canal Commission, Washington, opened bids November 20 for furnishing electric towing locomotives for all canal locks, under circular 650 as follows:

Class 1, item 1, one electric towing locomotive for Gatun—Bidder 1, Atlas Car & Mfg. Company, Cleveland, Ohio, Westinghouse, $38,500; General Electric, $31,100; Bidder 2, McMyler Interstate Company, Bedford, Ohio, Westinghouse, $26,175, General Electric, $20,400; 3, Fawcus Machine Company, Pittsburgh, Pa., Westinghouse, $22,145, General Electric, $18,613; 4, General Electric Company, Schenectady, N. Y., $25,278; 5, Westinghouse Electric & Mfg. Company, Washington, D. C., $24,702.

Item 2, for 39 electric towing locomotives for all locks—Bidder 1, Atlas Car & Mfg. Company, Cleveland, Ohio, Westinghouse, $764,400; General Electric, $761,670; 2, McMyler Interstate Company, Bedford, Ohio, Westinghouse, $602,550, General Electric, $598,650; 3, Fawcus Machine Company, Pittsburgh, Pa., Westinghouse, $492,017, General Electric, $473,382; 4, General Electric Company, Schenectady, N. Y., $468,000; 5, Westinghouse Electric & Mfg. Company, Washington, D. C., $532,430.

Item 3, spare parts—Bidder 1, Atlas Car & Mfg. Company, Cleveland, Ohio, Westinghouse, $28,642.18, General Electric

$28,706.98; 2, McMyler Interstate Company, Bedford, Ohio, Westinghouse, $21,343.30; General Electric, $19,362.80; 3, Faweus Machine Company, Pittsburgh, Pa., Westinghouse, $16,051, General Electric, $16,051; 4, General Electric Company, Schenectady, N. Y., $17,194.60; 5, Westinghouse Electric & Mfg. Company, Washington, D. C., $17,989.75.

Class 1, alternate A, Bidder 1, Atlas Car & Mfg. Company, Cleveland, Ohio, Westinghouse, $827,395.93, General Electric, $808,960.73; 2, McMyler Interstate Company, Bedford, Ohio, Westinghouse, $643,484.30, General Electric, $630,971.80; 3, Faweus Machine Company, Pittsburgh, Pa., Westinghouse, $521,621.76, General Electric, $499,472.76; 4, General Electric Company, Schenectady, N. Y., $498,016.35; 5, Westinghouse Electric & Mfg. Company, Washington, D. C., $564,334.50.

Trade Publications

Locomotive Cranes.—The Browning Engineering Company, Cleveland, Ohio. Pamphlet. Illustrates and describes a line of locomotive cranes built by this company and shows by numerous illustrations the various uses to which it can be put.

Electrical Appliances.—General Electric Company, Schenectady, N. Y. Seven Bulletins. Nos. 4837, 4840 and 4842 describe in detail the various types of circuit breakers manufactured by this company. The first contains a general description of the applications of circuit breakers, together with notes and diagrams descriptive of standard practice in the use of carbon break circuit breakers for various requirements as well as suggestive specifications. The remaining two bulletins, which supersede No. 4550, are devoted to circuit breakers that are especially adapted to motor-driven tool applications and their use in cases where economy of space, ease of operation and distant control are the deciding factors respectively. No. 4849, superseding No. 4633A, contains brief descriptions of various sizes and styles of motor-generator sets ranging in capacity from 95 to over 7000 kw. Number 4858, superseding No. 4675, is devoted to the type R. I. single-phase motors. No. 4867 describes and illustrates electric locomotives for switching and light freight service varying in weight from 22 to 35 tons. No. 4872 describes an outfit for the purification of transformer oil of all kinds, crude petroleum for oil fired furnaces, insulating varnish and japan, benzine, cylinder oil and viscous insulating compounds. The apparatus consists of a filter press, a pump and a motor for driving, all being mounted on I-beams which form skids. The outfit may be mounted on iron wheels if desired.

Grinding and Mixing Machinery.—Charless Ross & Son Company, 148 Classon avenue, Brooklyn, N. Y. Circular No. 16. Treats of a number of new types of mills and mixers recently brought out for grinding iron, paint and colors. These mills can be supplied either singly or in gangs and are both belt and motor driven. Mention is also made of a number of mixers which are either hand or power driven for various substances.

Twist Drills.—Detroit Twist Drill Company, Detroit, Mich. Booklet No. 18. Lists the various types of drills made by this company, which include taper and straight shank twist drills, drills for blacksmiths' drill presses, wood boring brace drills and bit stock drills for metal or wood. All of these are illustrated and brief tables giving the various sizes in which they are made are placed below the engravings. Instructions on the grinding and use of these drills are given, and tables of decimal equivalents and cutting speeds are also included. While the latter table includes all of the sizes of drills ordinarily used, a formula is given so that it is possible to obtain the correct cutting speed for any size of drill.

Hoists.—Erie Clutch and Pulley Company, Erie, Pa. Two circulars. Deal with two portable hoists, one of which is of the friction type and has a capacity of 600 lb., while the other is a worm and worm gear belt-driven hoist, having a capacity of one ton. The hoists are illustrated and brief specifications are given.

Lubricants.—The Chester Graphite Company, Chester Springs, Pa. Pamphlet. Shows how the Hexagon brand of flake graphite and graphite lubricants will reduce power losses. After a discussion of the advantages of flake graphite as a lubricant and instructions for its application, the various brands of graphite greases which this company makes are listed and briefly described.

Knife Grinders and Saw Sharpeners.—Samuel C. Rogers & Co. 10-16 Lock street, Buffalo, N. Y. Two circulars. Treat of the Buffalo line of automatic knife grinders which are equipped with spring cross feed and water attachments and a line of saw sharpeners for circular and band saws and band re-saws. Four different types of sharpener are illustrated, two for circular saws ranging from 6 to 40 and 8 to 72 in. in diameter respectively, an automatic sharpener for band re-saws from 2 to 8 in. wide and an automatic band saw sharpener for saws from 4 to 10 in. wide. Space is also given to a saw gummer and a brazing lamp for band saws having a maximum width of 1¼ in.

Hydroelectric Development.—Allis-Chalmers Company, Milwaukee, Wis. Bulletin No. 1623. Describes the Priests Rapids hydroelectric development at Hanford, Wash., which is noteworthy as illustrating a highly economical and efficient method of utilizing low-head water powers which are subject to extreme variations in head resulting from flood conditions. The entire plant is the design of the Allis-Chalmers Company, all of the machinery being supplied and installed by it. The equipment includes vertical triplex, hydraulic turbines, electric generators and centrifugal pumps, all of which are illustrated and described at length.

Motor-Driven Pumps.—Chicago Pump Company, 1053 Fulton street, Chicago, Ill. Catalogue A. Size, 6 x 9 in.; pages, 40. Relates to a line of automatic motor-driven pumps which includes sewage ejectors; bilge, house, sprinkler and condensation pumps and a pneumatic water supply system. The special features claimed for the pumps are efficiency, economy in operation and first cost, durability and quietness of operation. All the pumps are illustrated and described and a partial list of users completes the catalogue.

Electric Locomotives.—C. W. Hunt Company, 45 Broadway, New York, N. Y. Catalogue No. 11-5. Concerned with various types of electric locomotives for industrial trains. These are illustrated and described together with their accessories.

La Belle Specialties.—La Belle Iron Works, general offices at Steubenville, Ohio, and works at Steubenville and Wheeling, W. Va. Celluloid cards. Give on one side a complete list of products, which consist of pig iron, slabs, billets, sheet bars, universal plates, special plates for stamping, agricultural and automobile purposes, grooved rolled plates, skelp, black and galvanized merchant pipe, line pipe, drive pipe, casing, tubing, cut nails, black and galvanized open-hearth sheets. On the other side is the United States standard gauge for sheets.

Automatic Screw Machines and Their Products.—The National-Acme Mfg. Company, Cleveland, Ohio. Calendar. Size, 12 x 15 in. This calendar is of the loose leaf variety, a separate leaf being devoted to each month. The first one shows the plant that the company occupied in Hartford, Conn., until 1901, the Cleveland plant and the recently completed plant at Montreal. The calendar begins on November 1 and the leaf for each month contains an illustration of one of the screw machines built by this company or some of its products. On the back of the sheets is some additional information regarding the machine or the products illustrated on the face.

Alternating-Current Generators.—Triumph Electric Company, Cincinnati, Ohio. Bulletin No. 481. Illustrates and describes a line of direct-connected alternating-current generators, which are intended to be driven by steam engines or water wheels. These machines are of the revolving-field type. The construction of the various parts is gone into in some detail and there are a number of half-tone engravings supplementing the text.

Drilling and Boring Machines.—Hoefer Mfg. Company, Freeport, Ill. Catalogue Q. Relates to a line of drilling and boring machines which includes drilling machines in the bench, stationary and sliding head and gang types together with vertical or horizontal drilling and boring machines and combination horizontal and vertical machines.

Milling Machines.—The Ingersoll Milling Machine Company, Rockford, Ill. Two bulletins. The first, No. 24-A, describes the operation of milling 12 sets of four-cylinder en-bloc castings in one pass through the company's fixed rail machine in approximately 50 min. The text is supplemented by a half-tone engraving of the operation being performed. Bulletin No. 26-A contains other examples of rapid milling of automobile crank cases and engine cylinders. In addition to illustrations of the different operations there are half-tone engravings of a four-head adjustable rail and a three-head fixed rail machine.

Bridge Builders' Tools.—Standard Bridge Tool Company, Bessemer Building, Pittsburgh, Pa. Folder. Relates to the Thomas spacing table. Illustrations are given showing a 48-in. Thomas automatic spacing table and large multiple punch, and also showing a Thomas spacing table with 48-in. automatic carriage handling two pairs of 8 x 8-in. angles, 80 ft. long, equipped with variable speed motor.

Internal Combustion Engines.—The Root & Van Dervoort Engineering Company, East Moline, Ill. Catalogue No. 11. Size, 7 x 10 in.; pages, 56. Presents terse descriptions of the R & V engines using gasoline, gas, naphtha, distillate and alcohol as fuel and shows their outline and general construction. These engines are built in both the vertical and horizontal styles and are also mounted on trucks.

Byers Wrought Iron Pipe.—Bourne-Fuller Company, Cleveland, Ohio, selling agents. Booklet. Size, 4 x 7 in.; pages, 30. Illustrates and explains the manufacture of wrought iron pipe in the plant of the A. M. Byers Company from the time the metal enters the plant as ore, including the puddling process, rolling the muck bar, making of skelp, the making of the lap weld and the finished pipe.

Elevator Guide Lubrication.—The Peterson Engineering Company, 50 Church street, New York, N. Y. Catalogue. Describes a new method of lubricating elevator guides with the Economy elevator guide lubricator. This device applies a thin strip of grease exactly where the shoes bear on the rails for each trip of the car. Several different types of lubricator are made so that the device is suitable for steel and wooden rails and also for counter weight guides. Interesting data are given of tests made on elevators equipped with this lubricator. Among those mentioned are the one at the 168th street station of the New York subway where one of these devices reduced the grease consumption from 480 to 30 ounces per month, and another installed in the Washington monument. In the case of the latter installation a complete analysis of the cost of lubrication is included.

Flaming Arc Carbons.—Thompson Electric Company, Superior avenue, N. W., Cleveland, Ohio. Price list of Planier brand of flaming arc carbons.

Current Metal Prices.

The following quotations are for small lots, New York. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Refined iron:
1 to 1⅞ in. round and square.... ℔ lb 1.70¢
1½ to 4 in. x ⅝ to 1 in..... ℔ lb 1.70¢
1½ to 4 in. x ¼ to 5-1 ..... ℔ lb 1.80¢
Rods—⅝ and 11-16 round and square. ℔ lb 1.80¢

Angles: Cts. ℔ lb.
3 in. x ¼ in. and larger.....1.80¢
3 in. x 3-16 in. and ⅜ in. .....2.20¢
1½ to 2½ in. x ⅛ in.....1.95¢
1½ to 2¾ in. x 3-16 in. and thicker....1.85¢
1 to 1¼ in. x 3-16 in. .....1.95¢
1 to 1½ x ¼ in. .....2.00¢
⅞ x ⅛ in. .....2.10¢
¾ x ¼ in. .....2.15¢
⅝ in. x ⅛ in. .....3.35¢
⅛ x 3-32 in. .....4.40¢

Tees:
1 in. .....2.25¢
1¼ in. .....210¢
1½ to 2½ x ¼ in.....1.90¢
1½ to 2½ x 3-16 in.....2.00¢
3 in. and larger.....1.85¢
Beams .....1.80¢
Channels, 3 in. and larger.....1.80¢
Bands—1½ to 6 x 6-16 to No. 8.....2.00¢
Burden's "H. B. & S." iron, base price....2.95¢
"Burden's Best" iron, base price.....3.15¢
Norway bars .....3.60¢

Merchant Steel from Store—

per lb
Bessemer machinery .....1.70¢
Toe calk, tire and sleigh shoe.....2.50@3.00¢
Best cast steel, base price in small lots.....7¢

Sheets from Store—

Black	One pass. C.R. soft steel.	R. G. cleaned.
No. 16	℔ lb 2.35¢	2.75¢
Nos. 18 to 20	℔ lb 2.40¢	2.85¢
Nos. 22 and 24	℔ lo 2.45¢	2.95¢
No. 26	℔ lb 2.60¢	3.05¢
No. 28	℔ lb 2.65¢	3.25¢

Russia, Planished, &c.

Genuine Russia, according to assortment .....℔ lb 12 @14¼
Patent planished, W. Dewees Wood.....℔ lb A. 10¢; B. 9¢ net

Galvanized

Nos. 12 and 14 .....℔ lb 2.65¢
No. 24 .....℔ lb 3.00¢
No. 26 .....℔ lb 3.20¢
No. 28 .....℔ lb 3.50¢
No 20 and lighter 36 inches wide, 25¢ higher.

Genuine Iron Sheets—

Galvanized

Nos. 22 and 24.....℔ lb 5.50¢
No. 26.....℔ lb 6.00¢
No. 28.....℔ lb 7.00¢

Corrugated Roofing—

2½ in. corrugated.	Painted.	Galvd.
No. 24..... ℔ 100 sq. ft...	$3.75	$4.70
No. 26..... ℔ 100 sq. ft...	2.85	3.90
No. 28..... ℔ 100 sq. ft...	2.50	3.65

Tin Plates—

American Charcoal Plates (per box)

"A.A.A." charcoal:
IC, 14 x 20.....$6.35
IX, 14 x 20..... 7.60
A. charcoal:
IC, 14 x 20.....$5.30
IX, 14 x 20..... 5.40

American Coke Plates—Bessemer—
IC, 14 x 20.....107 lb.....$4.20
IX. 14 x 20..... 5.20

American Terne Plates—
IC, 20 x 28 with an 8 lb. coating.....$8.10
IX, 20 x 28 with an 8 lb. coating.....10.10

Seamless Brass Tubes—

List November 13, 1908. Base price. 18¢

Brass Tubes, Iron Pipe Sizes—

List November 13, 1908. Base price. 18¢

Copper Tubes—

List November 13, 1908. Base price. 21¢

Brazed Brass Tubes—

List February 1, 1911. 19½¢ ℔ lb

High Brass Rods—

List February 1, 1911. 14⅝¢ ℔ lb

Roll and Sheet Brass—

List February 1, 1911. 14⅞¢ ℔ lb

Brass Wire—

List February 1, 1911 14⅝¢ ℔ lb

Copper Wire—

Base price, Carload lots mill 14½¢

Copper Sheets—

Sheet copper hot rolled, 16 oz. (quantity lots) .....℔ lb 17¼¢
Sheet copper cold rolled, 1¢ ℔ lb advance over hot rolled.
Sheet copper polished 20 in. wide and under, 1¢ ℔ square foot.
Sheet copper polished over 20 in. wide, 2¢ ℔ square foot.
Planished copper, 1¢ ℔ square foot more than polished.

METALS—

Tin—

Straits pig .....℔ lb 46 @47 ¢

Copper—

Lake ingot .....℔ lb 14 @14½¢
Electrolytic .....℔ lb 14 @14½¢
Casting .....℔ lb 13¾@14 ¢

Spelter—

Western .....℔ lb 7 @ 7¼¢

Zinc—

No. 9, base, casks...℔ lb 9¢ Open...℔ lb 9¼¢

Lead—

American pig .....℔ lb 5¼@5⅝¢
Bar .....℔ lb 6⅜@6⅝¢

Solder—

½ & ½, guaranteed.....℔ lb 26½@26⅝¢
No. 1 .....℔ lb 24 @24½¢
Refined .....℔ lb 22½@23½¢
Prices of solder indicated by private brand vary according to composition.

Antimony—

Cookson .....℔ lb..@10¼¢
Hallets .....@10 ¢
Other brands .....9@ 9½¢

Bismuth—

Per lb $2.00@$2.25

Aluminum—

No. 1 aluminum (guaranteed over 99% pure), in ingots for remelting.....22¢
Rods and Wire.....Base price 31¢
Sheets .....Base price 33¢

Old Metals—

Dealers' Purchasing Prices Paid in New York.

	Cents.
Copper, heavy and crucible.....	11.50
Copper, heavy and wire.....	11.00 to 11.25
Copper, light and bottoms.....	10.00 to 10.25
Brass, heavy	7.75 to 8.00
Brass, light	6.00 to 6.25
Heavy machine composition.....	9.75 to 10.00
Clean brass turnings.....	7.75 to 8.00
Composition turnings.....	8.25 to 8.75
Lead, heavy	3.90
Lead, tea	3.65
Zinc, scrap	4.75